

FIG. 1

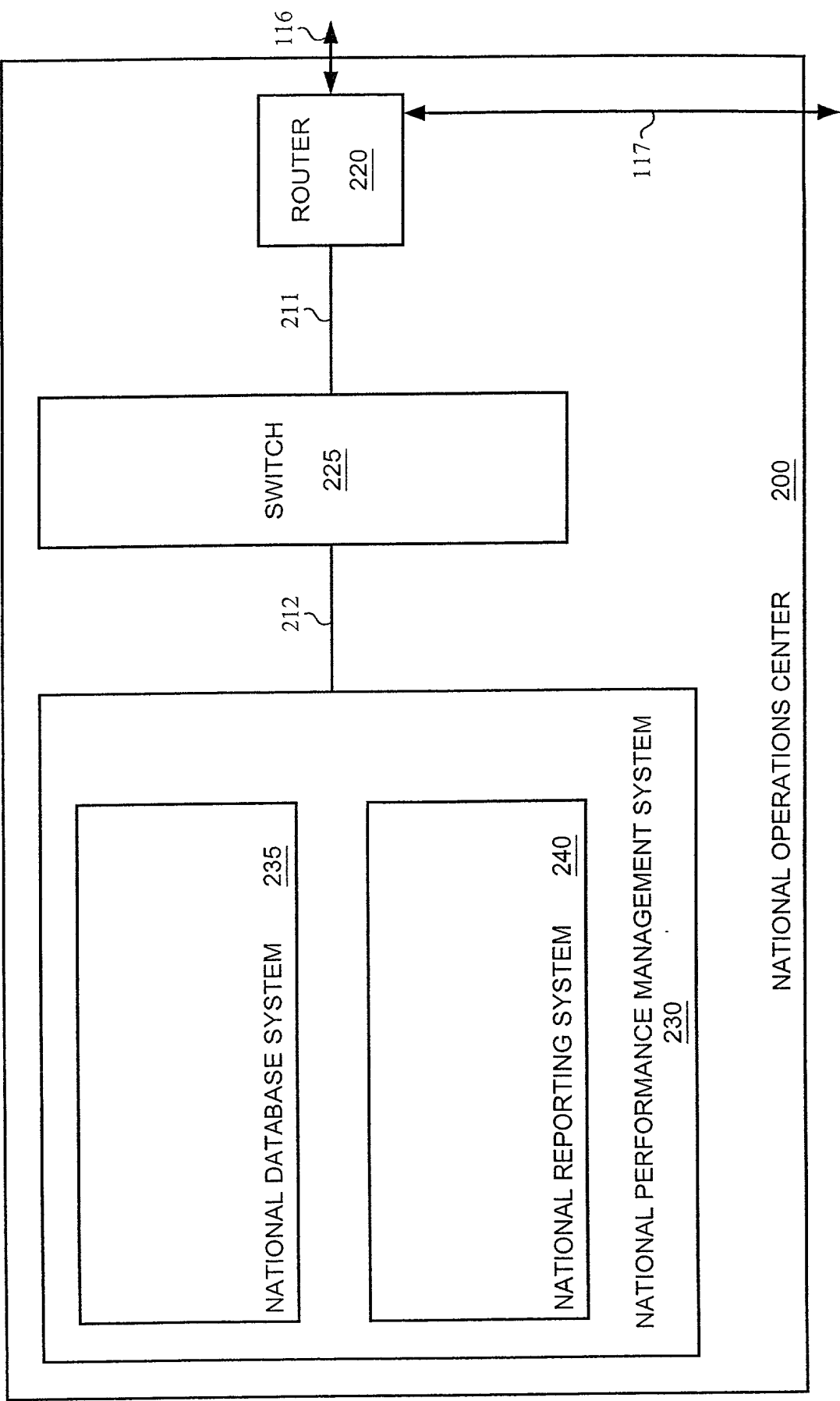


FIG. 2

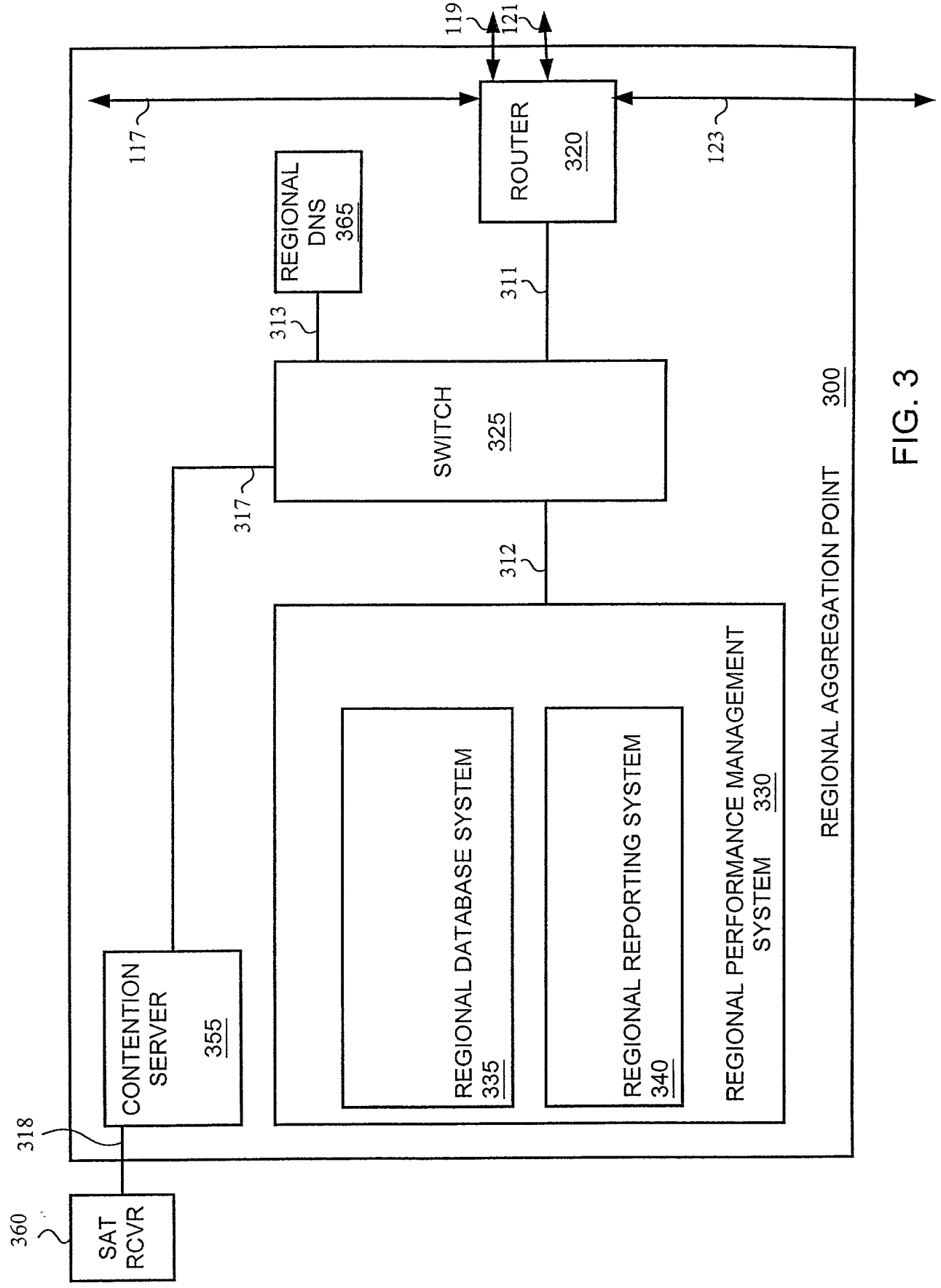


FIG. 3

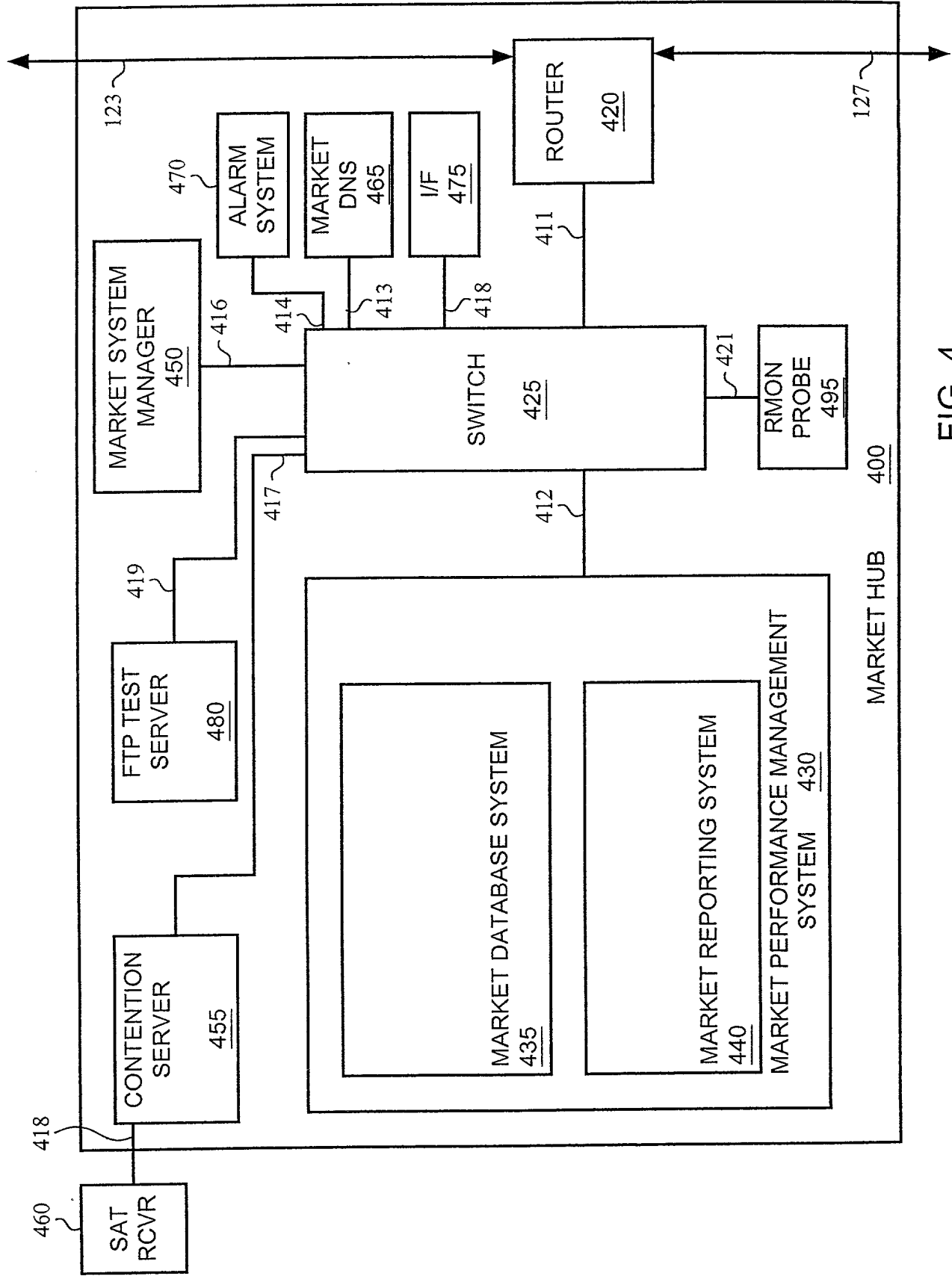
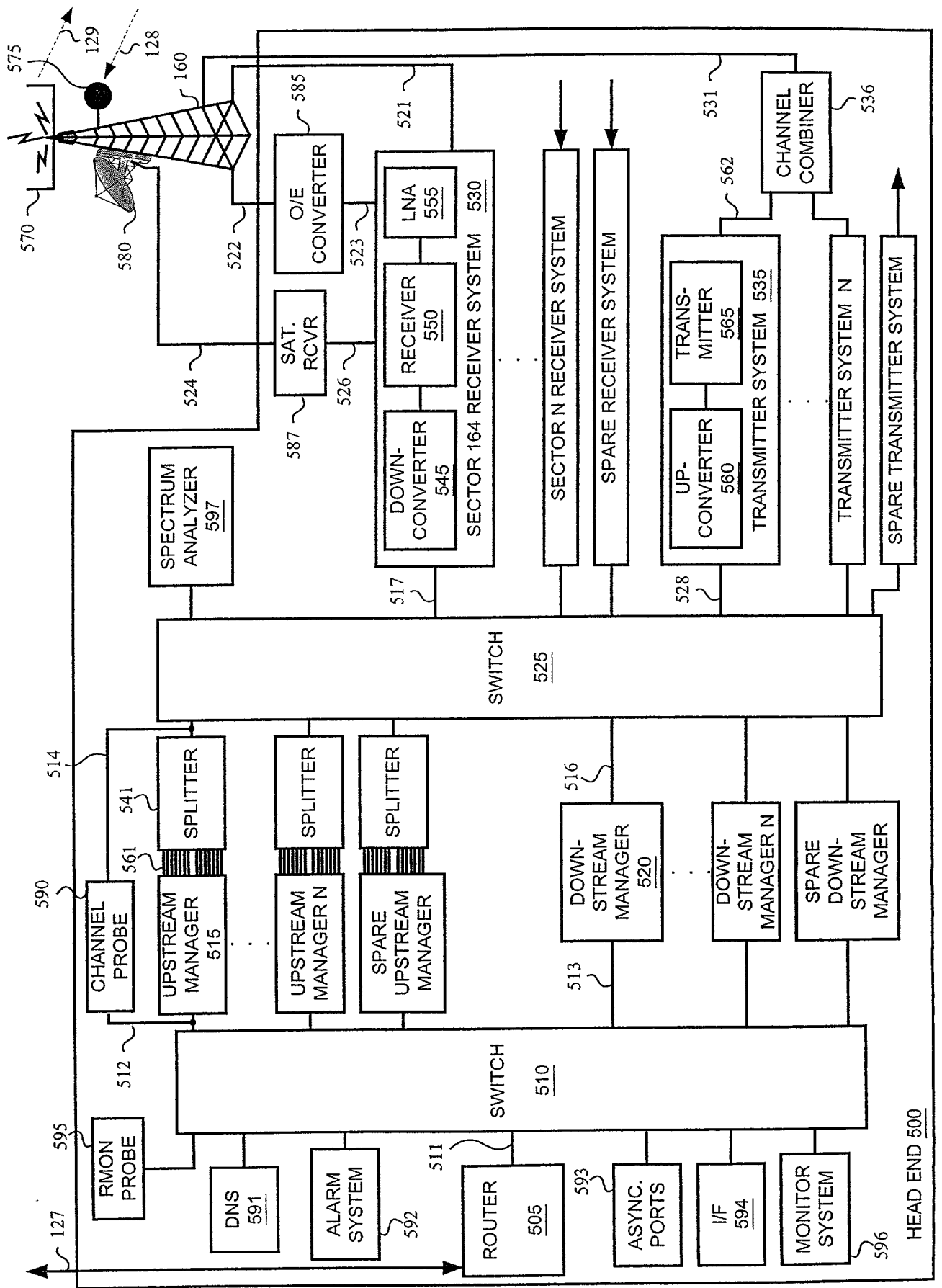


FIG. 4

FIG. 5



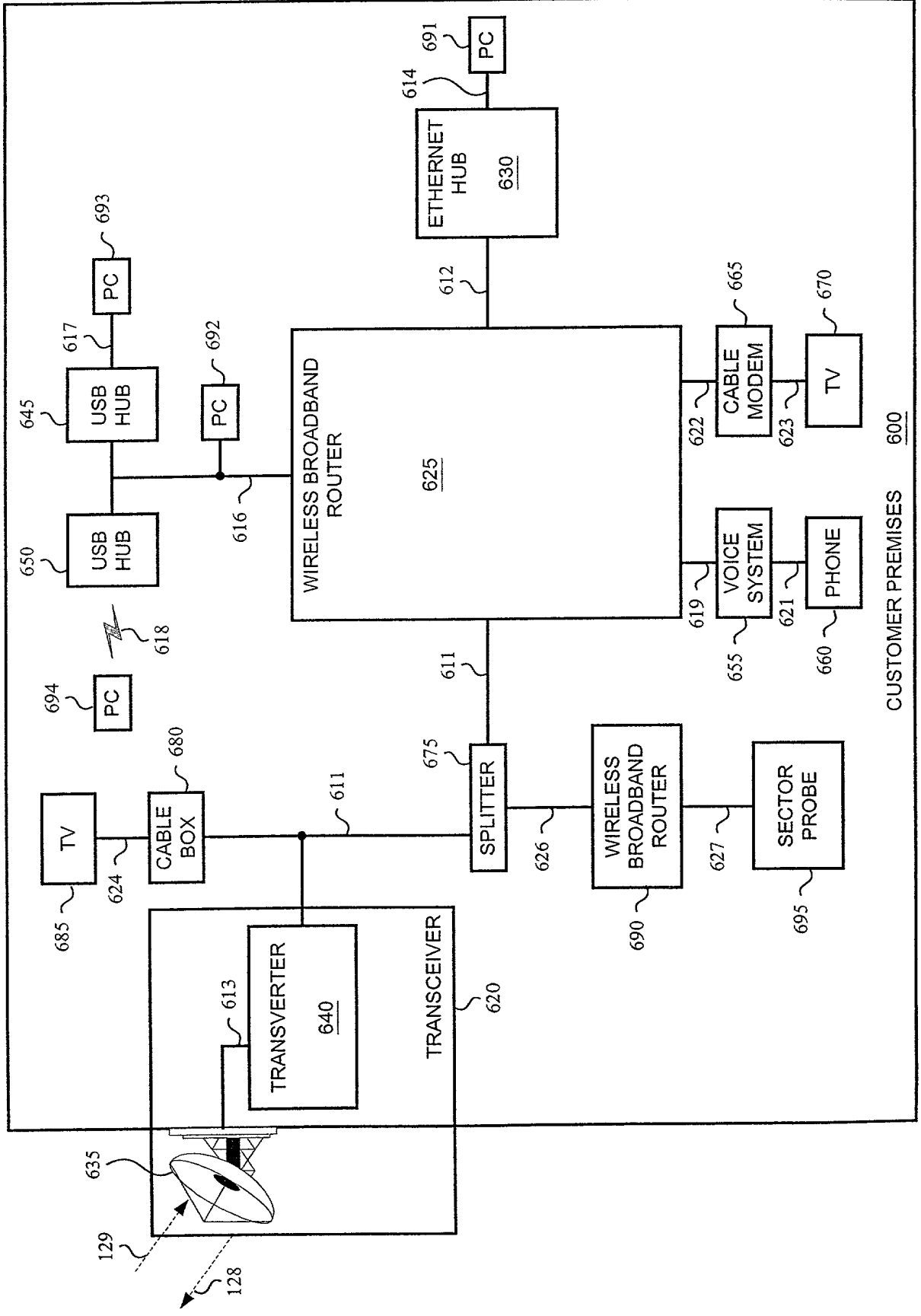


FIG. 6

PERFORMANCE  
MANAGEMENT  
SYSTEM  
700

COLLECTOR  
SYSTEMS  
710

CHANNEL  
PROBE  
712

SECTOR  
PROBE  
714

RMON  
PROBE  
716

CM  
STATUS  
718

DATABASE  
SYSTEMS  
720

MARKET  
DB  
SYSTEM  
722

REGIONAL  
DB  
SYSTEM  
724

NATIONAL  
DB  
SYSTEM  
726

REPORTING  
SYSTEMS  
730

MARKET  
REPORT  
SYSTEM  
732

REGIONAL  
REPORT  
SYSTEM  
734

NATIONAL  
REPORT  
SYSTEM  
736

FIG. 7

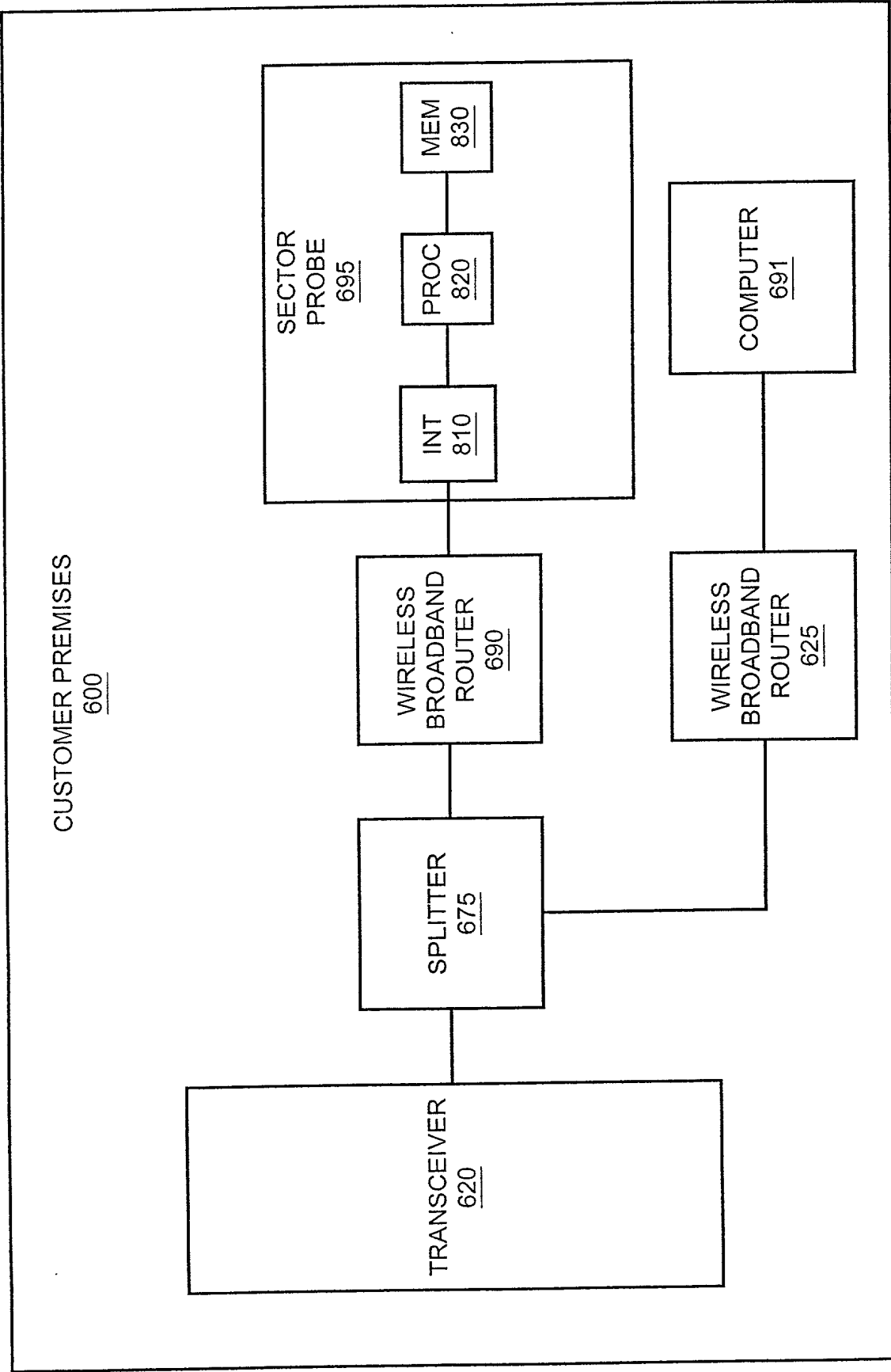


FIG. 8

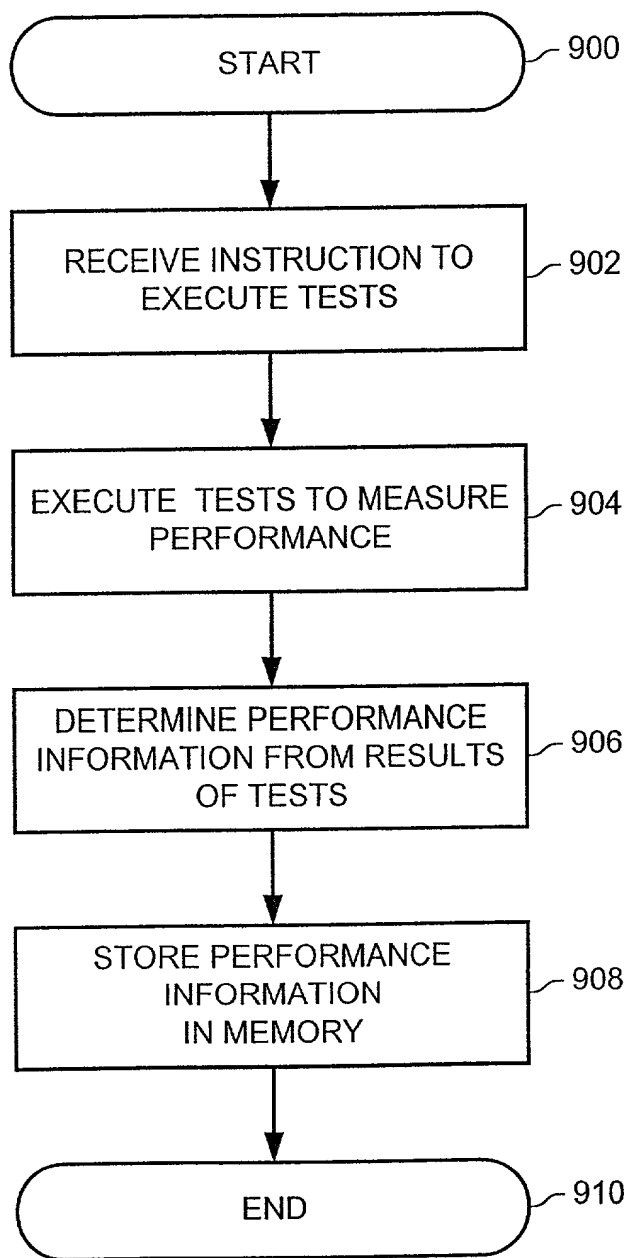


FIG. 9

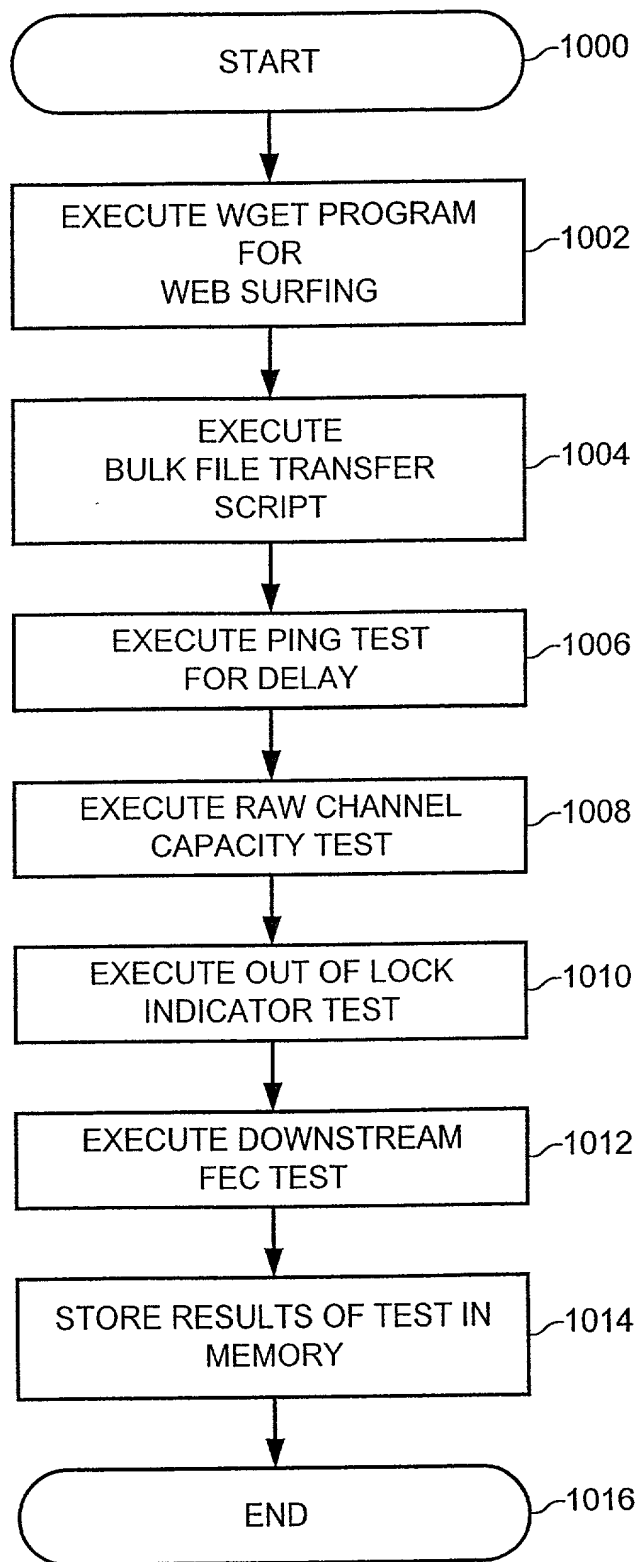


FIG. 10

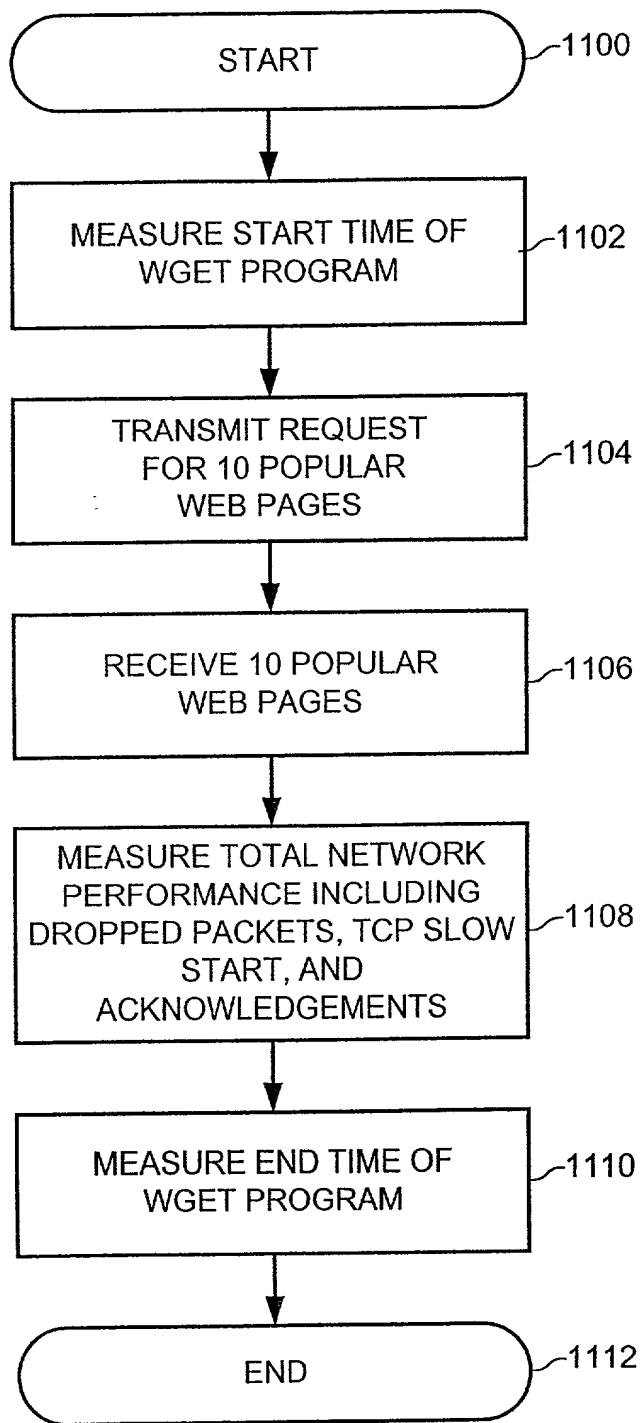


FIG. 11

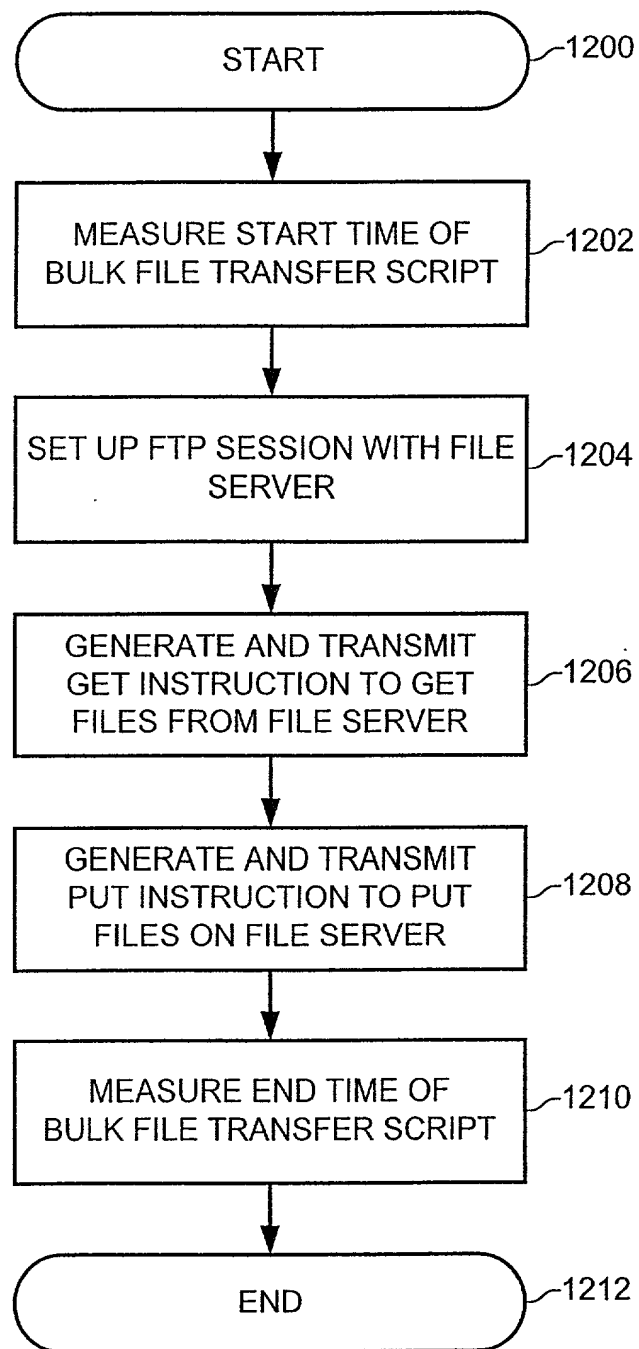


FIG. 12

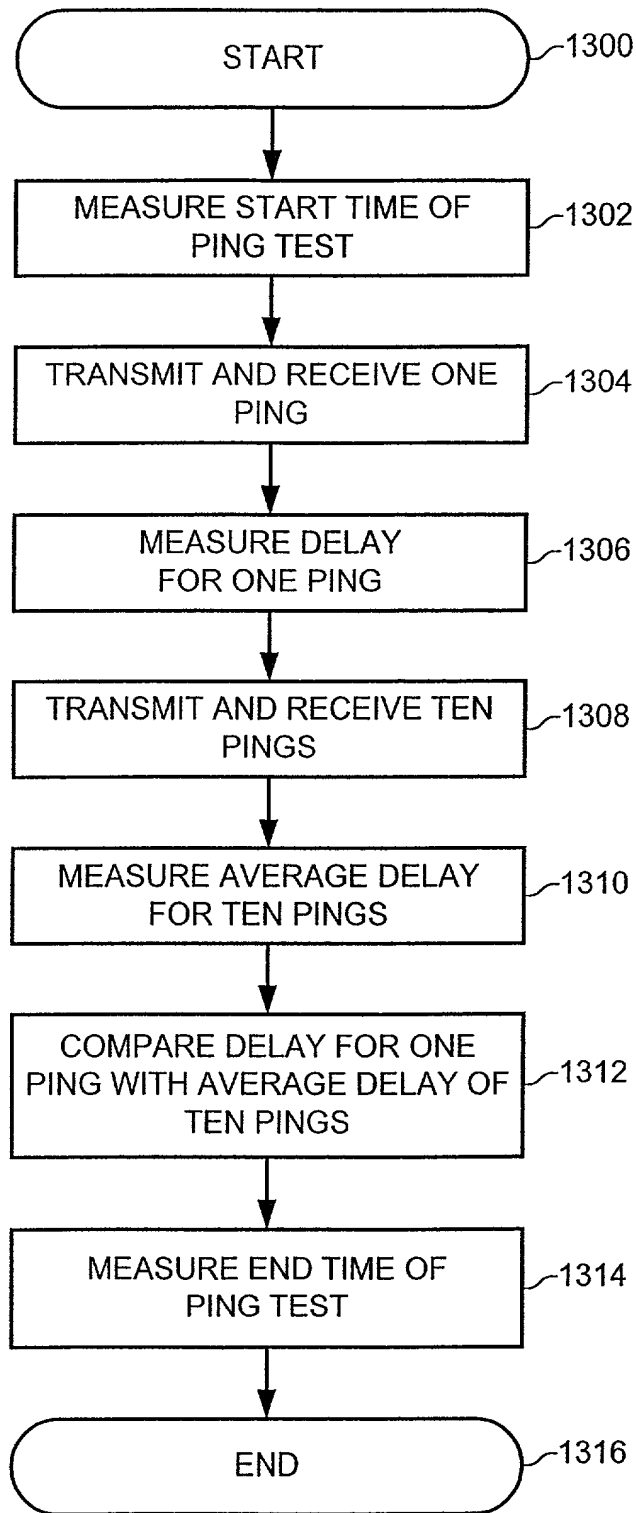


FIG. 13

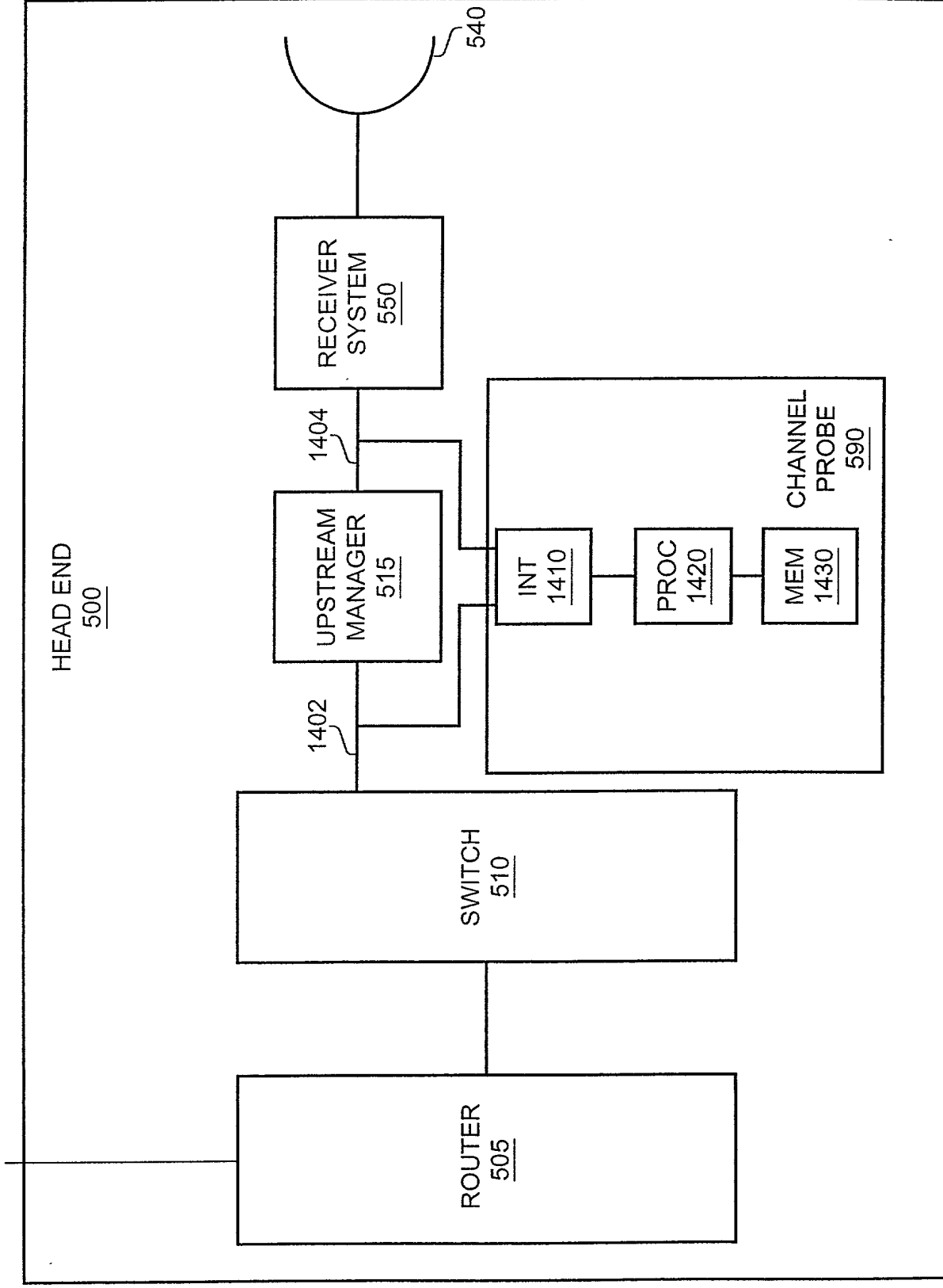
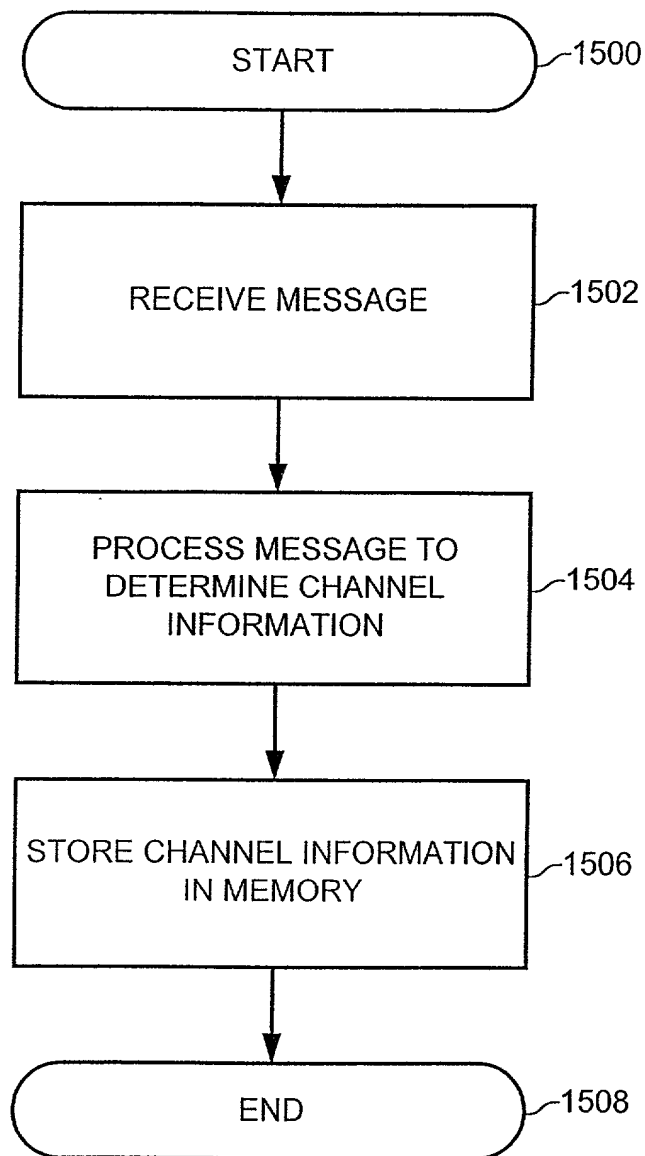


FIG. 14



**FIG. 15**

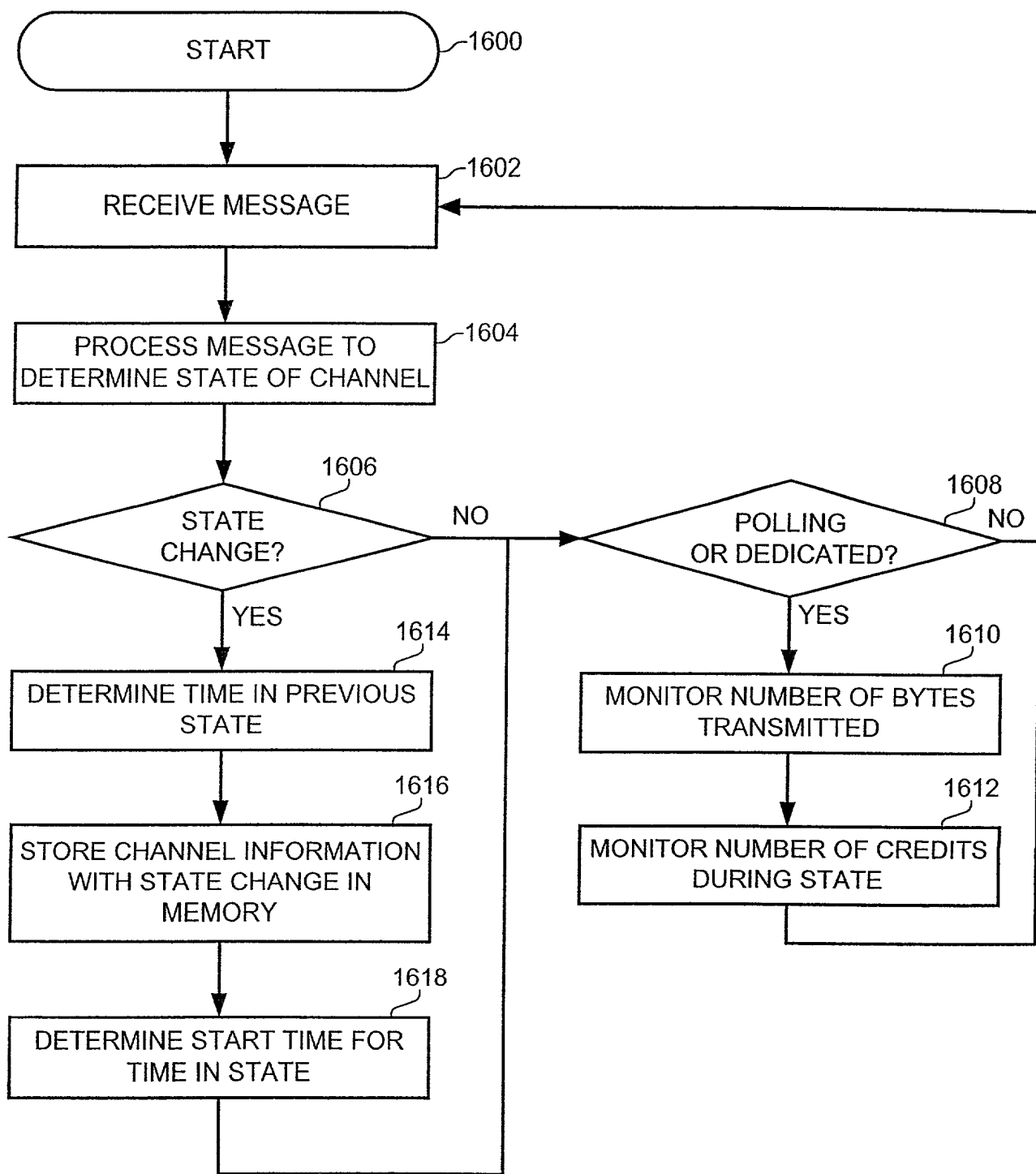


FIG. 16

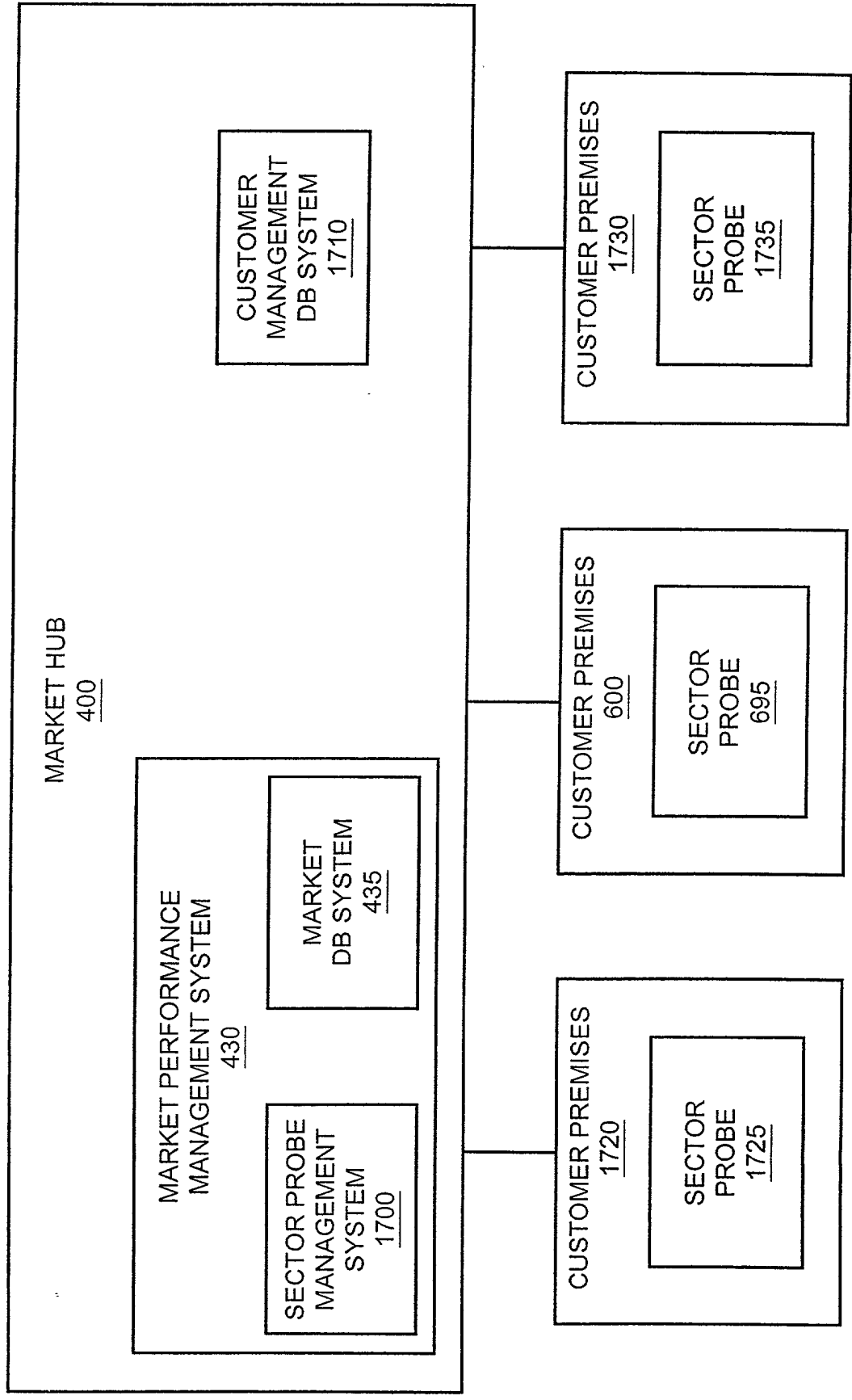
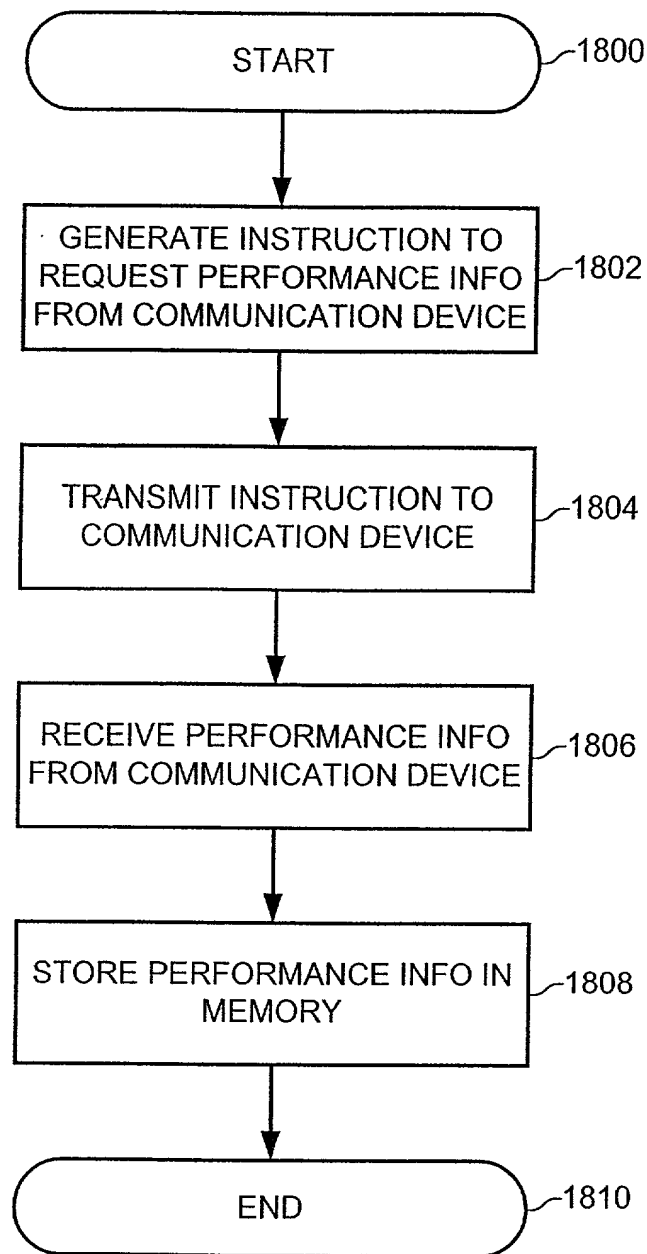


FIG. 17



**FIG. 18**

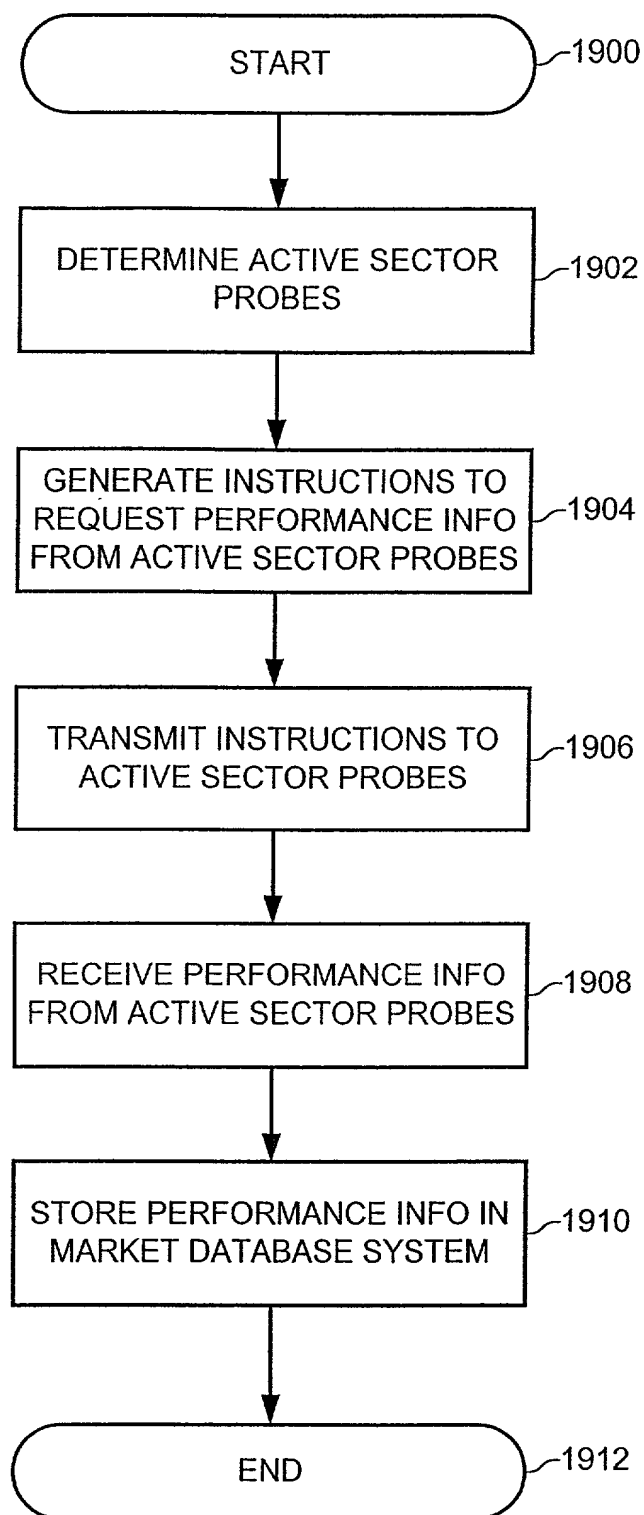


FIG. 19

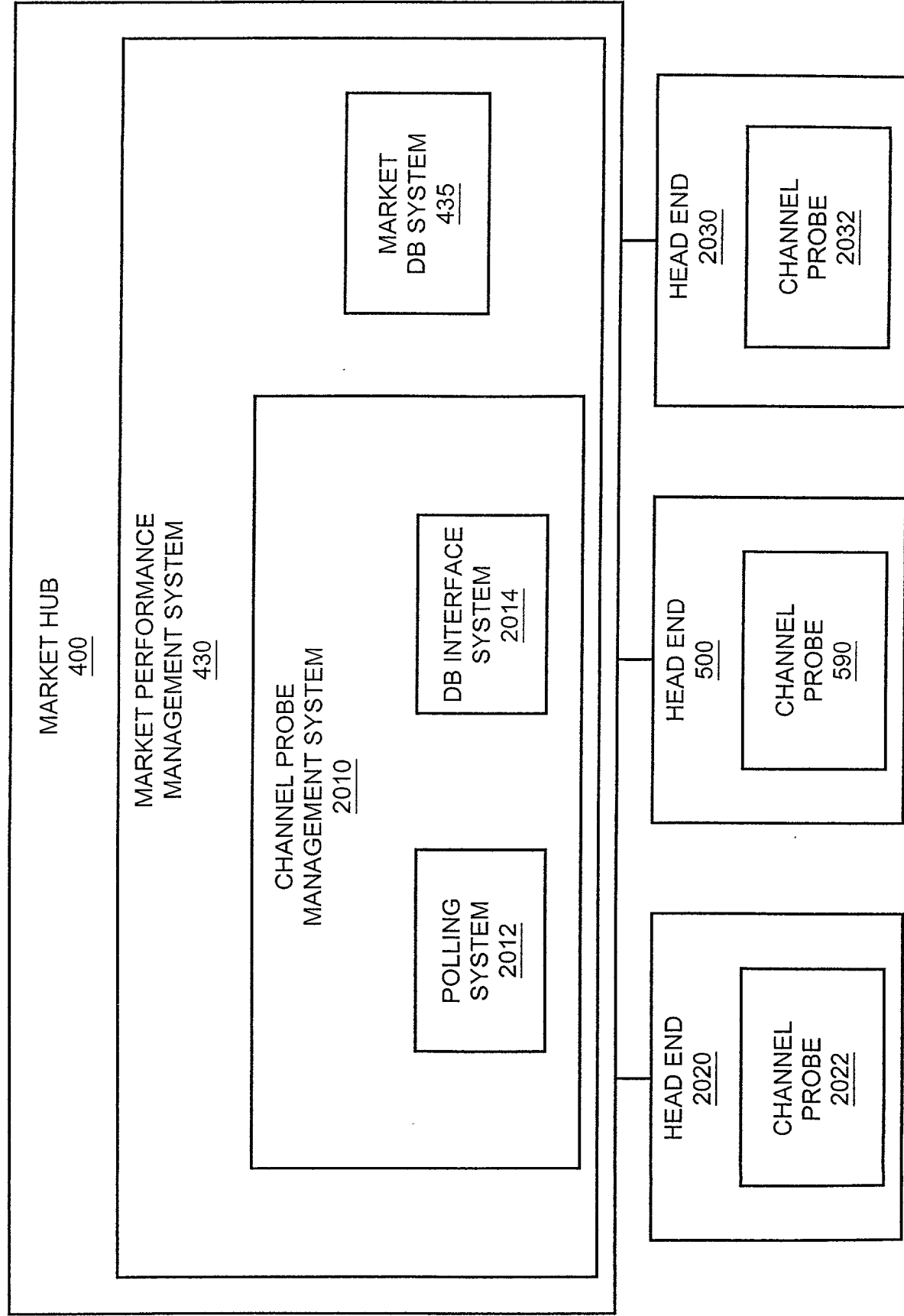


FIG. 20

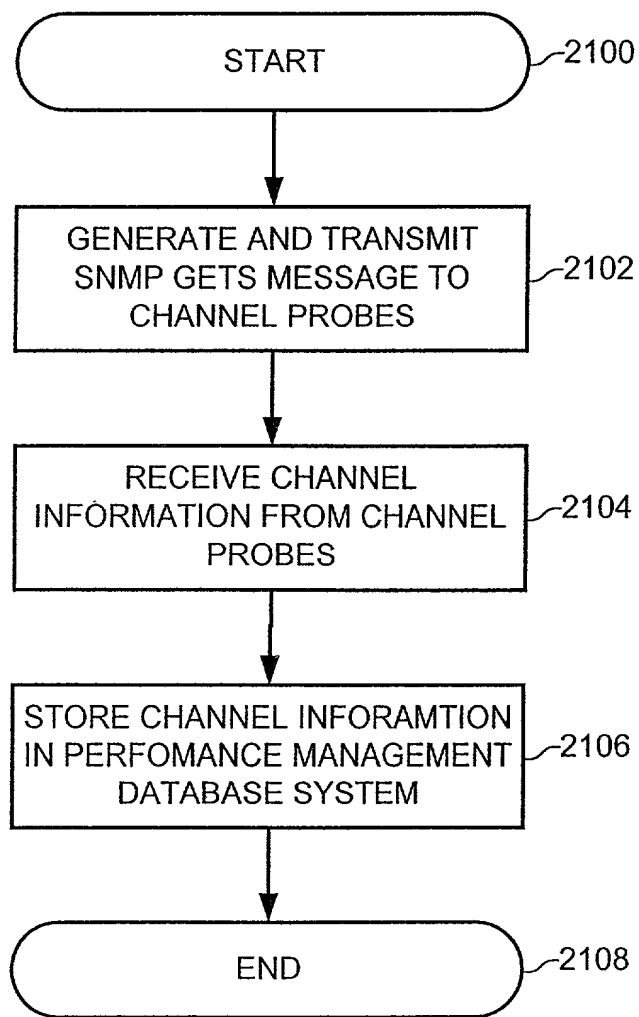


FIG. 21



FIG. 22  
PRIOR ART

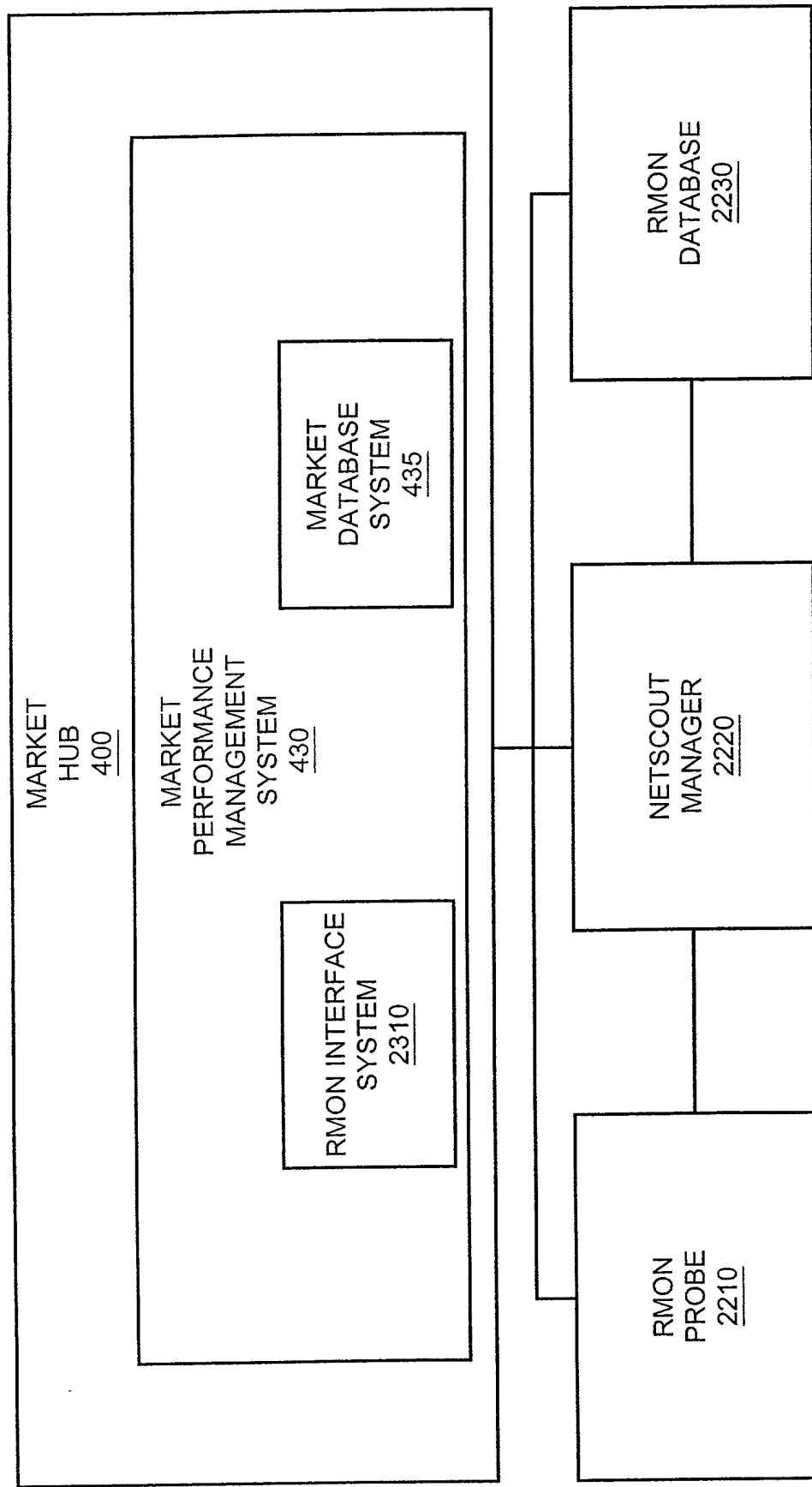


FIG. 23

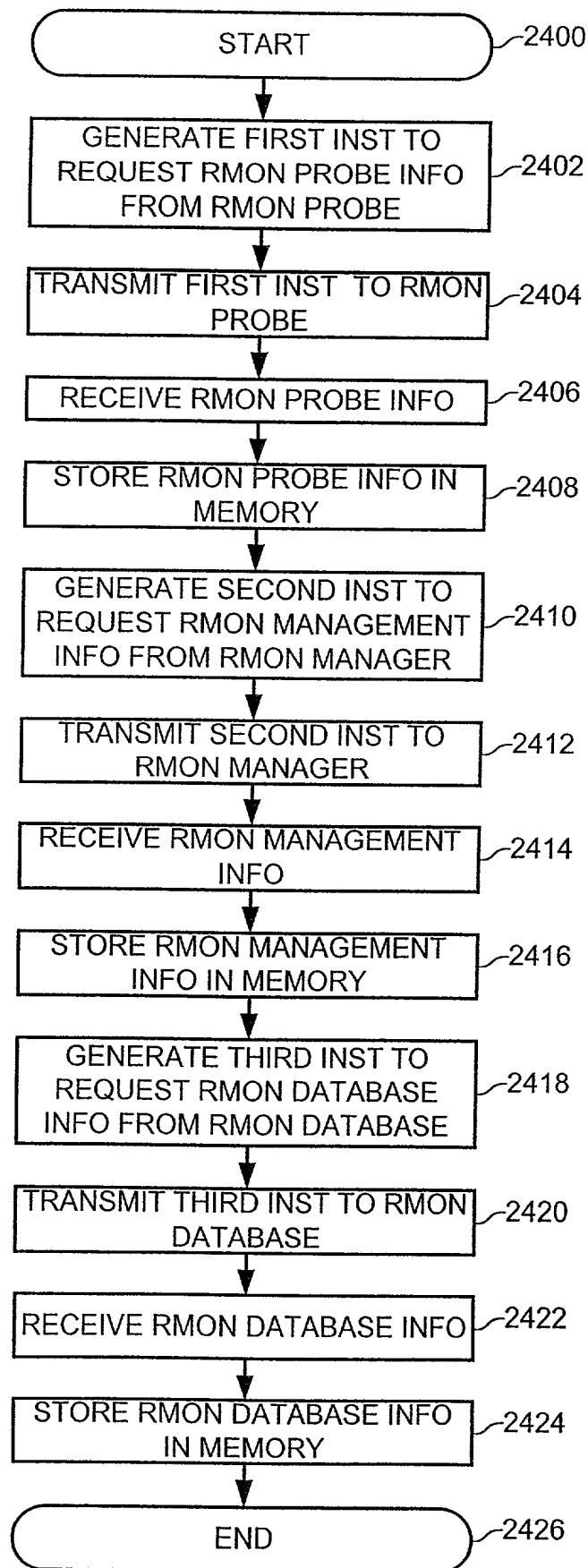


FIG. 24

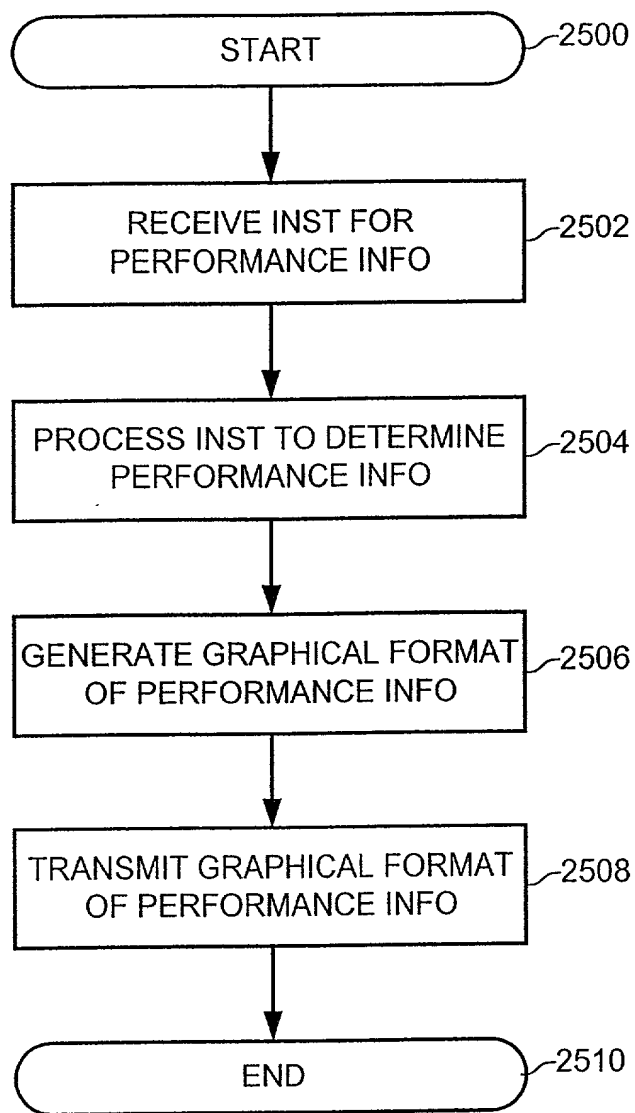
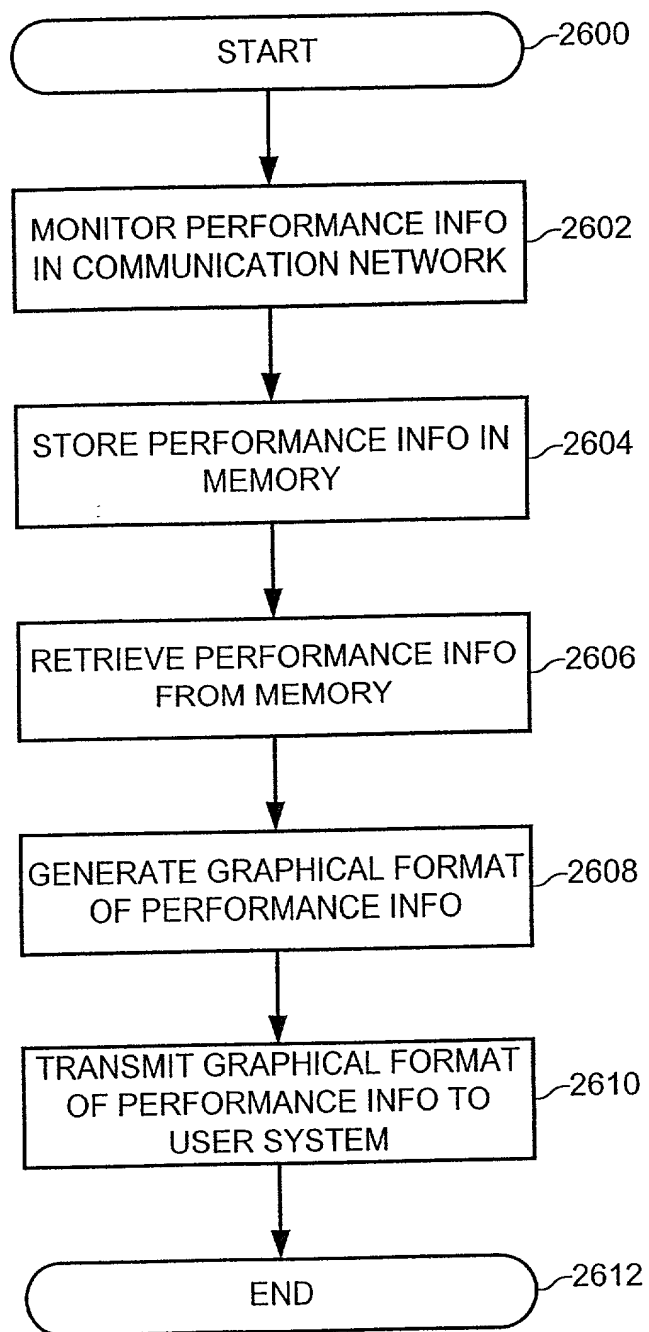


FIG. 25



**FIG. 26**

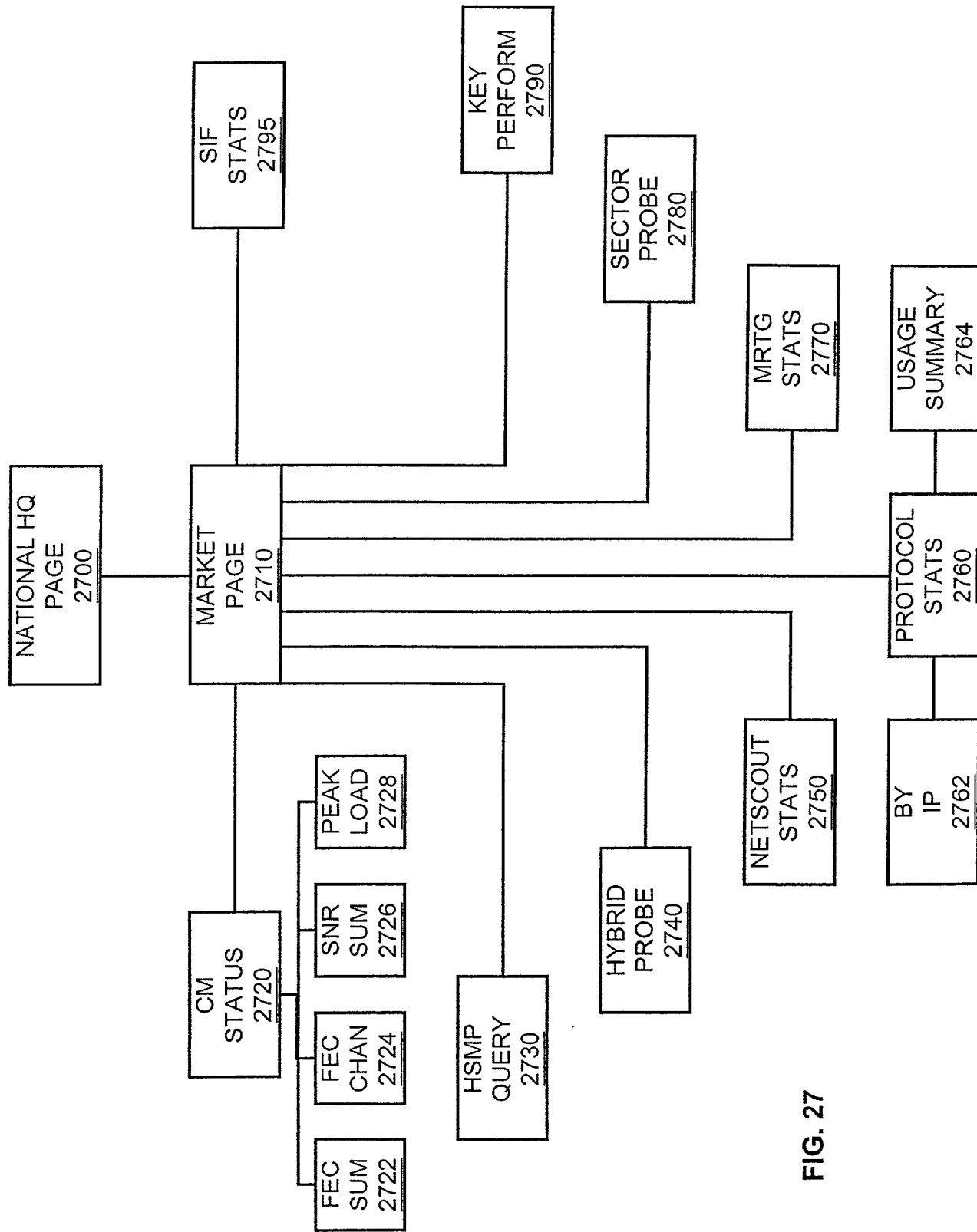


FIG. 27

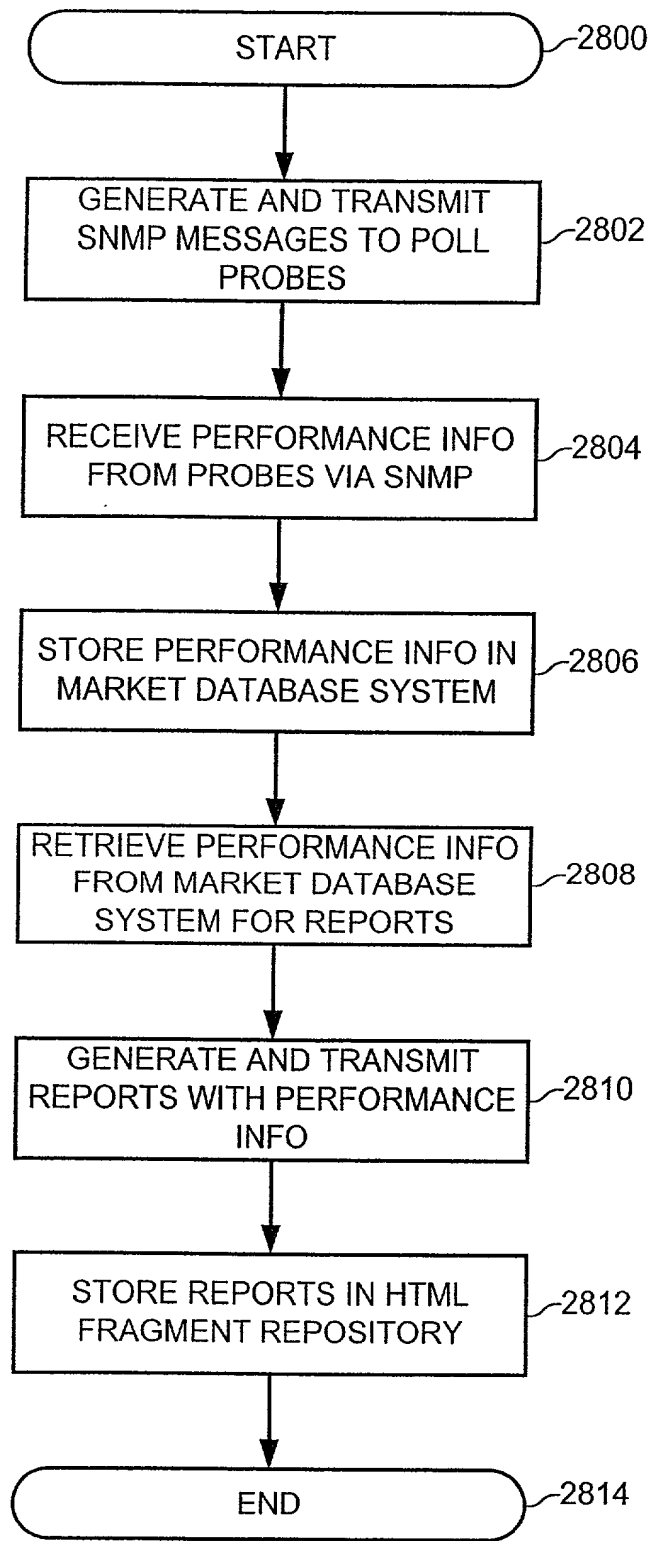


FIG. 28

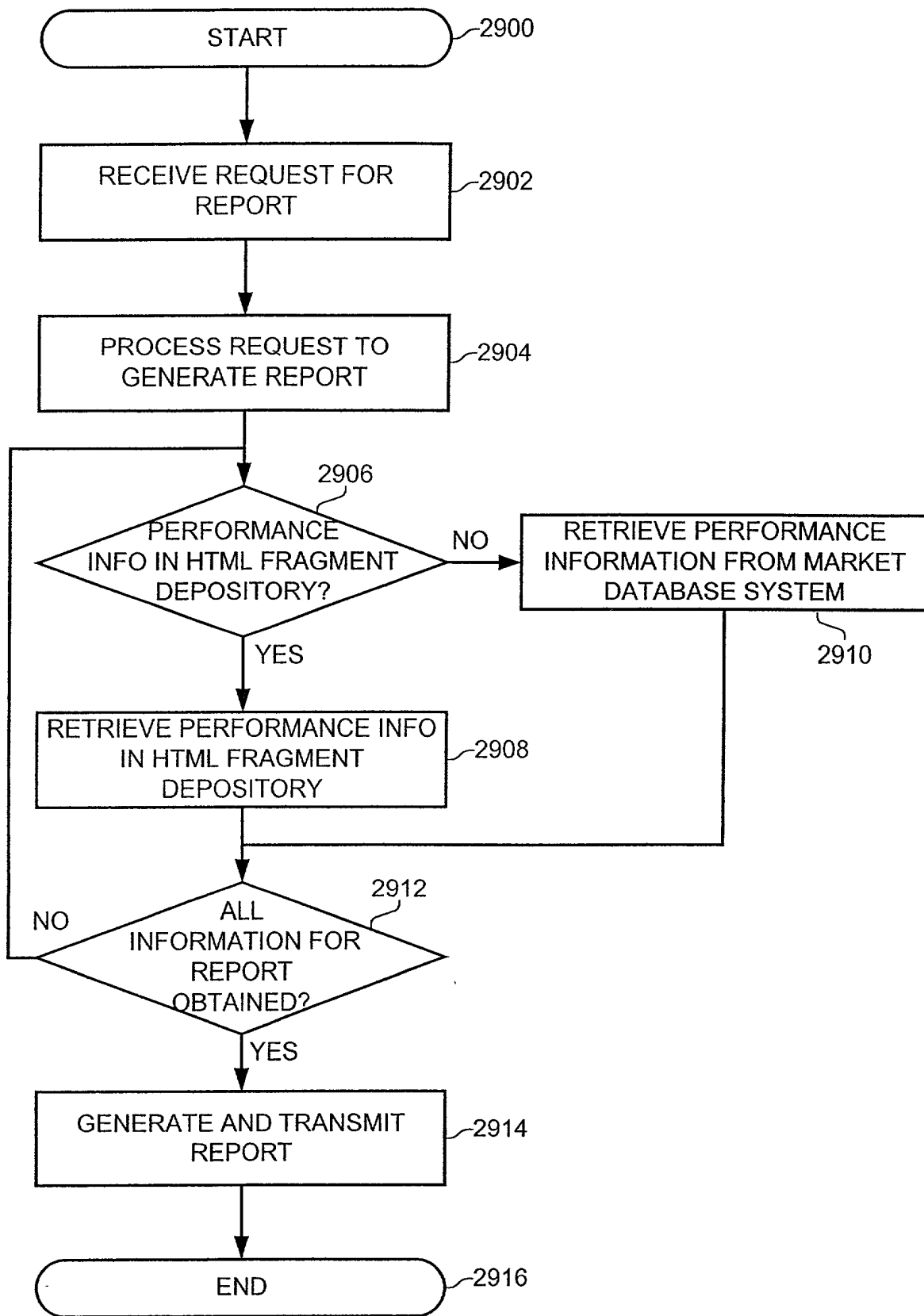


FIG. 29

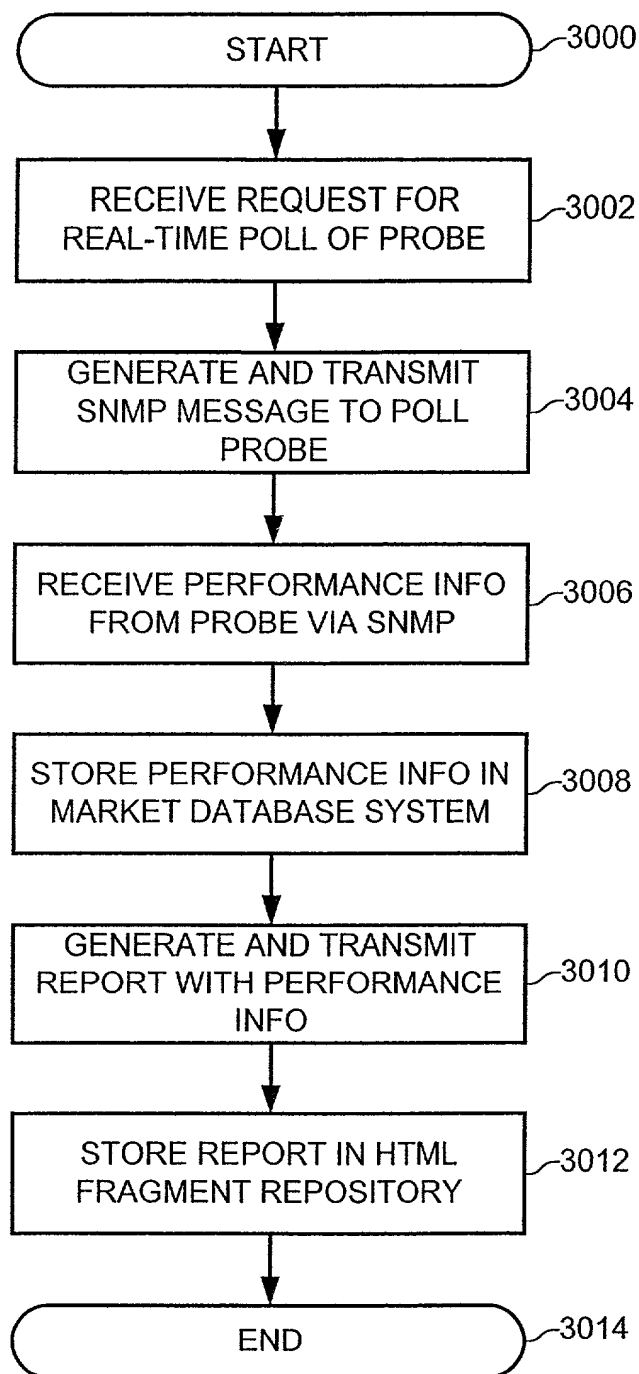


FIG. 30

TOP SECRET

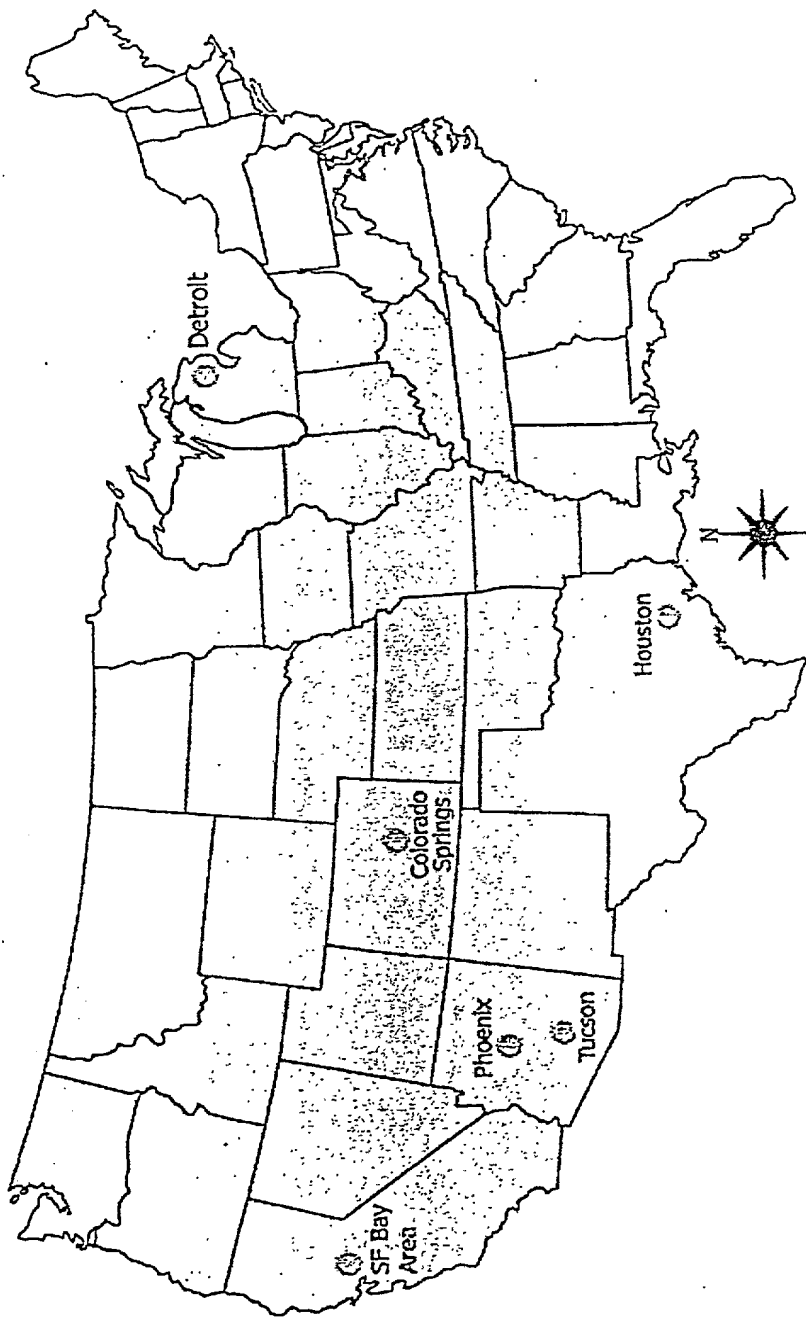
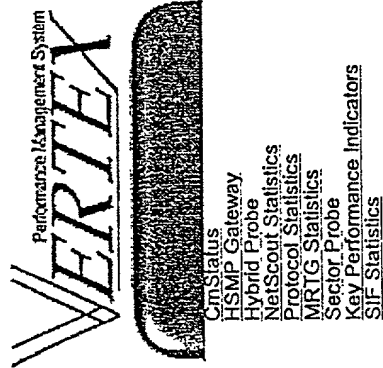


FIG. 31



## Phoenix Network Health Monitor Interface



Visibility into the network is a primary concern of the Vertex team. It is the job of the network management architecture to enable this visibility. Without it, the network cannot be effectively run; faults cannot be located and corrected, capacity planning cannot be done, and progressive problems cannot be found and stopped from reaching a critical stage until it is too late.

The architecture is generally divided up into three parts: collectors (also known as 'probes'), data warehouses, and reporting tools. Collectors include devices such as the NetScout RMON probe and two in-house engineered probes, the Hybrid Probe and the Sector Probe. Data warehouses consist of Oracle databases residing on Market and National Vertex Servers. These databases run on Sun Microsystems UNIX workstations that have RAID mass storage systems built in. The reporting tools are primarily the web-based tools hosted by the Market VERTEX Servers.

Follow the links along the left-hand side of the page to gain access to VERTEX reports.

Until a permanent home is picked, hasd size graphs can be found [here](#).

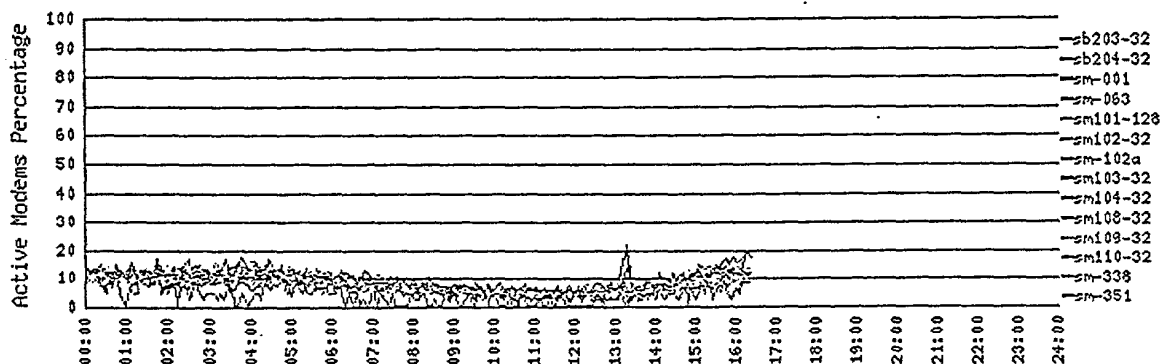
FIG. 32

# User/Channel Distribution by Sector

Enter Query Date in YYYYMMDD format:

**Active Modem Percentage: modem counts in polling, contention, and dedicated over total WBRs.**

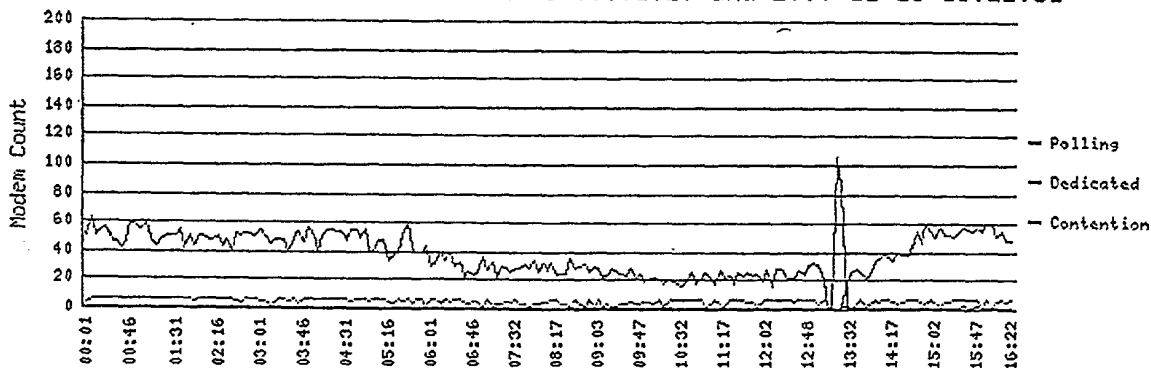
All sectors between 2000-12-15 00:01:20 and 2000-12-15 16:22:41 GMT



## Sector sb203-32 on hm01.phoenix.speedchoice.com

Click on the summary for detailed graphs.

Sector sb203-32 between 2000-12-15 00:01:20 and 2000-12-15 16:22:31



[FEC Summary] [FEC Channel] [SNR Summary] [Peak Load/Capacity: 103 %]

FIG. 33

# FEC Summary Graph for sb203-32

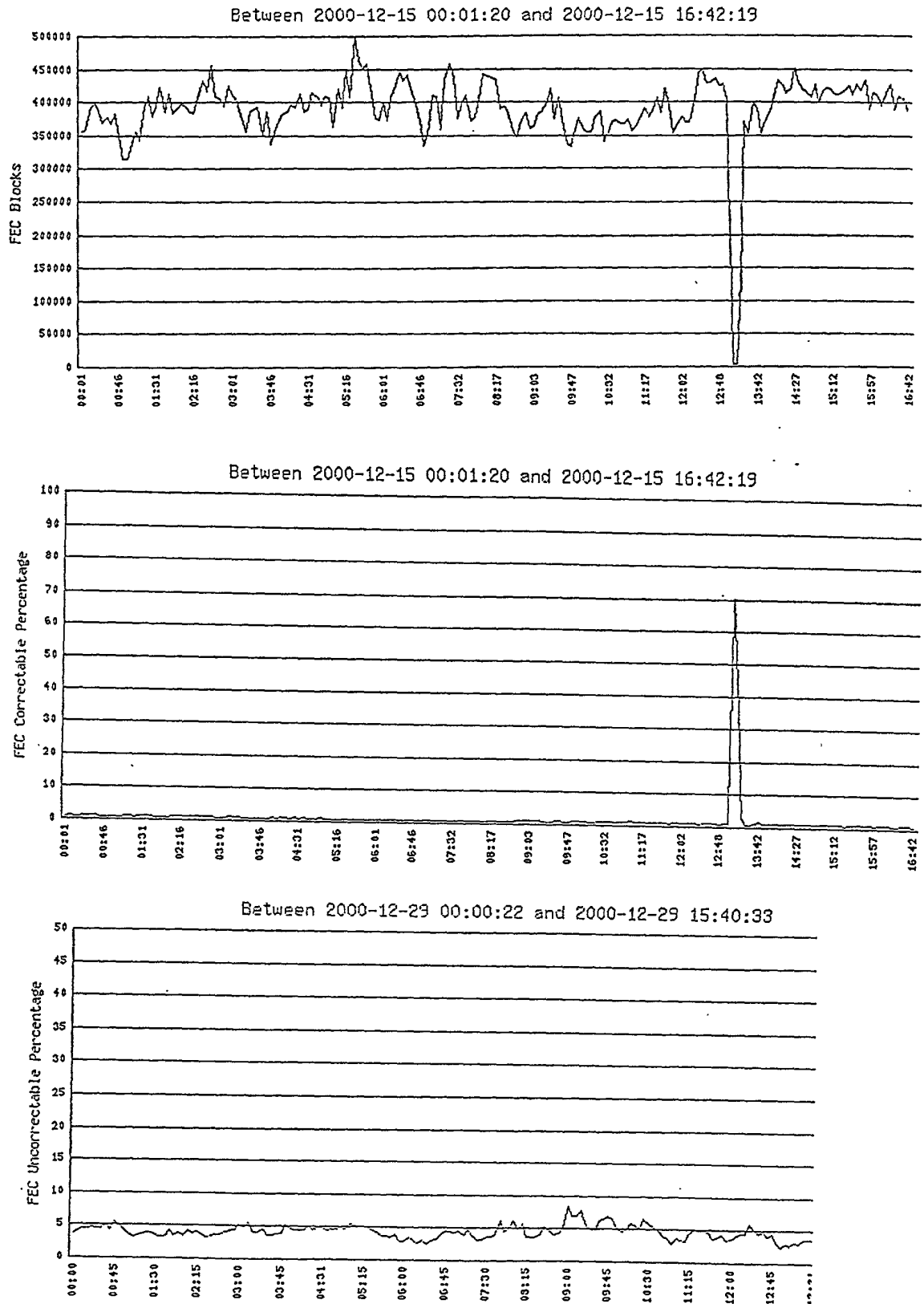


FIG. 34

# Channel detail graph for sb203-32 channel 2

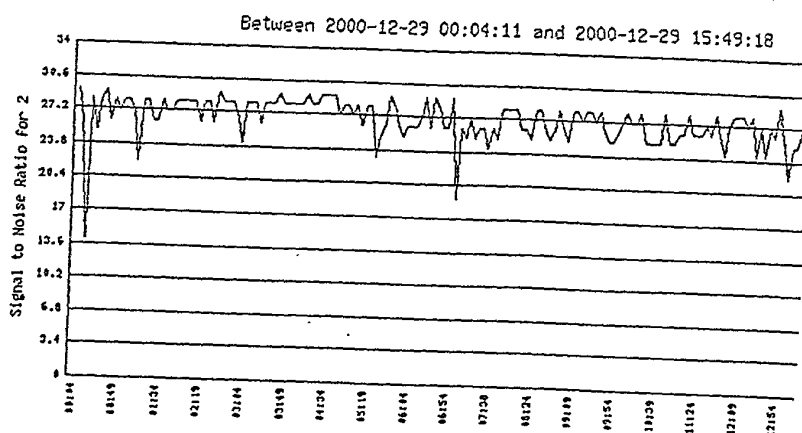
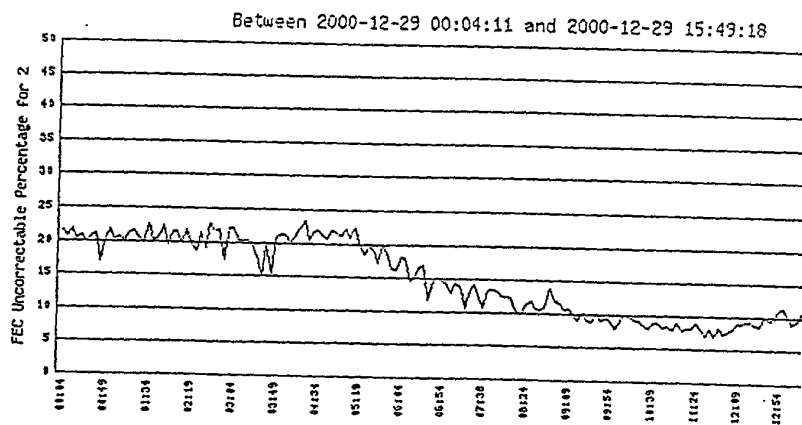
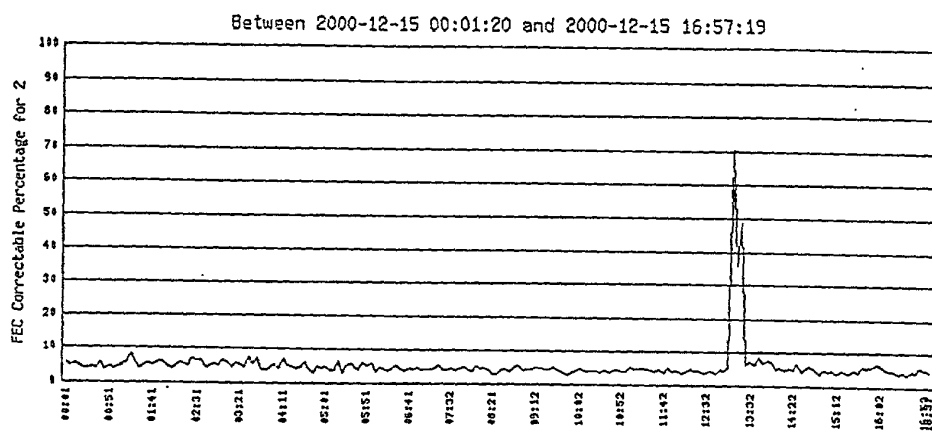
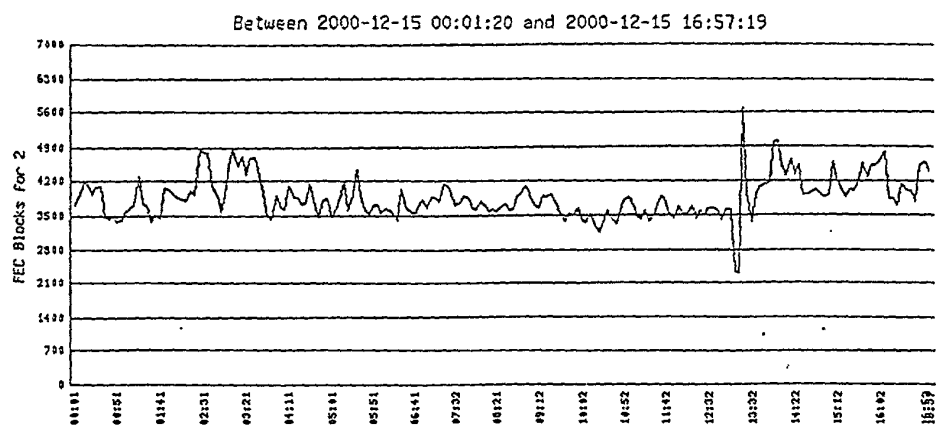


FIG. 35

# Signal to Noise graph for sb203-32

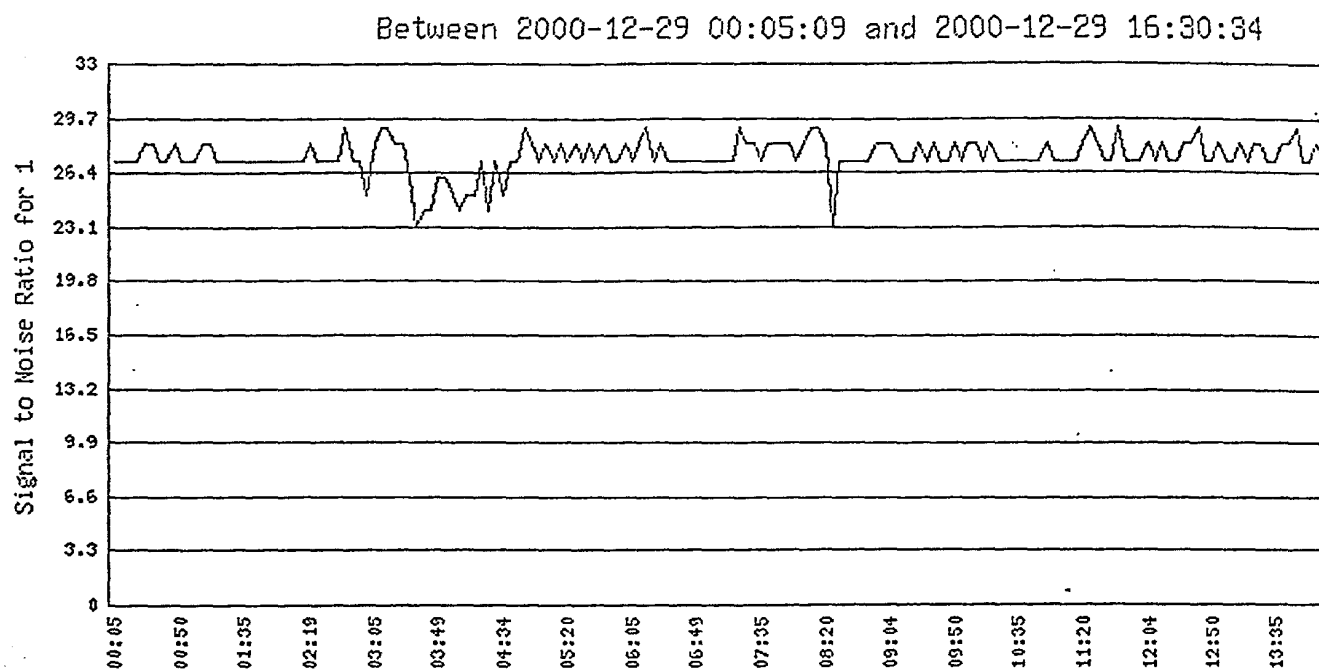


FIG. 36

# Load and Capacity

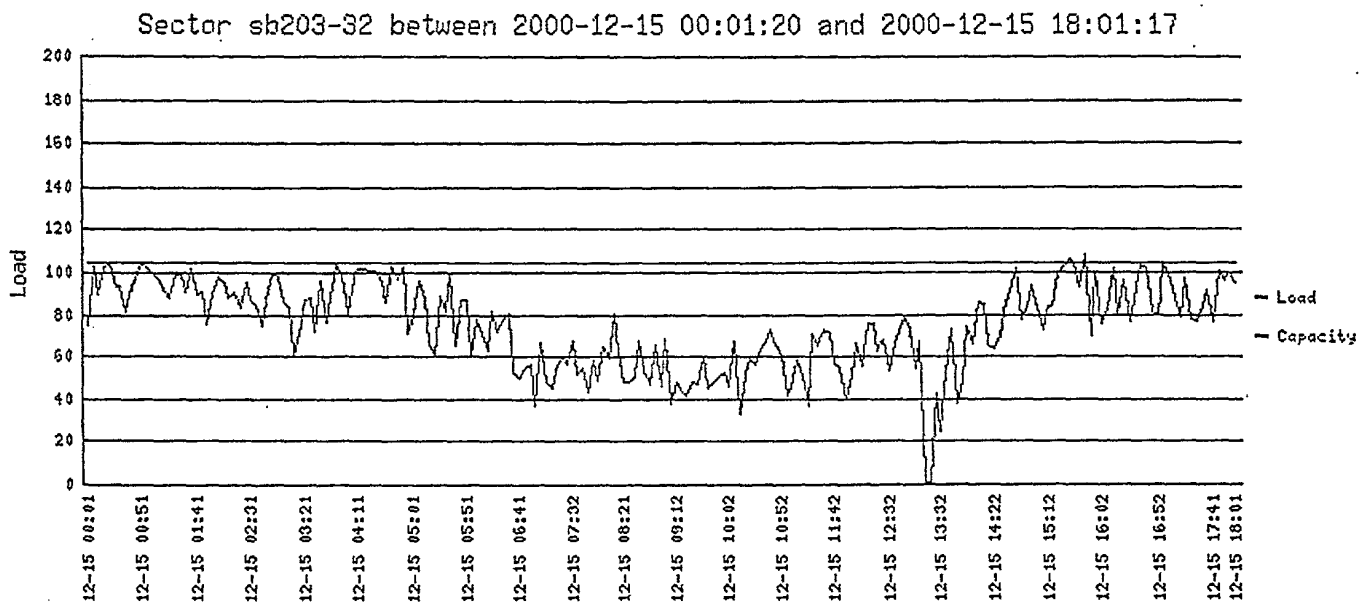


FIG. 37

# Remote HSMP Query Form

Access Level	BWG Engineer
IP Address e.g, 24.221.13.83	<input type="text"/> <i>Note:</i> Enter an IP address -OR- a User ID; not both
User ID e.g, 149219	<input type="text"/> <i>Note:</i> This corresponds to the UUID field in the database
Query Type	<p><input checked="" type="radio"/> Standard queries:</p> <div style="border: 1px solid black; padding: 5px; margin: 5px;">             hybs              qpsk tstat              qpsk stat              qpsk gdump              qams              hostname              hybs so0              hybs so1           </div> <p>(Hold down the 'CTRL' key to select multiple queries)</p> <p><input type="radio"/> Custom query: <input type="text"/></p> <p><i>Note:</i> Only administrators can perform custom queries</p>
<input type="button" value="Submit Request(s)"/>	
<p>Warning: This could take up to 30 seconds per query; please be patient</p>	

FIG. 38

# Hybrid Probe - Phoenix

Start date:  Start time:   
 End date:  End time:

Number of entries:

CSV Format ☐

Start time: 12-19-00 00:00:00 GMT  
 End time: 12-19-00 18:22:19 GMT  
 Currently: 12-19-00 18:22:24 GMT

IP Address	Active - %	Ratio	Poll - Timer	Ded - Timer	Poll - Tx bytes	Ratio	Ded - Tx bytes	Ratio	Index	Ratio
Total (all)	N/A	N/A	0:0:0:0:0	0:0:0:0:0	N/A	N/A	N/A	N/A		N/A
Average (all)	N/A	N/A	0:0:0:0:1	0:0:0:0:1	N/A	N/A	N/A	N/A	1	N/A

FIG. 39

## Top Talkers

Total Users = 812

Total number of upstream bytes for all users = 12983.77 MB's

Total number of downstream bytes for all users = 116697.0 MB's

Average number of upstream bytes per user = 15.99 MB's

Average number of downstream bytes per user = 143.72 MB's

Date Range Searched: From to 2000-12-11 23:59:59

TOP TALKERS

CMID	Up MegaBytes	% of Total	Information	CMID	Down MegaBytes	% of Total	Information
10000002309	1078.07	8.30	<a href="#">Info</a> <a href="#">Detail</a>	10000000462	4544.09	3.89	<a href="#">Info</a> <a href="#">Detail</a>
10000015561	572.24	4.41	<a href="#">Info</a> <a href="#">Detail</a>	10000020500	3811.87	3.27	<a href="#">Info</a> <a href="#">Detail</a>
10000007207	385.66	2.97	<a href="#">Info</a> <a href="#">Detail</a>	10000000698	3701.56	3.17	<a href="#">Info</a> <a href="#">Detail</a>
10000017759	357.82	2.76	<a href="#">Info</a> <a href="#">Detail</a>	10000006338	3395.66	2.91	<a href="#">Info</a> <a href="#">Detail</a>
10000014703	347.42	2.68	<a href="#">Info</a> <a href="#">Detail</a>	10000005958	3342.65	2.86	<a href="#">Info</a> <a href="#">Detail</a>
10000000555	308.35	2.37	<a href="#">Info</a> <a href="#">Detail</a>	10000002126	3272.81	2.80	<a href="#">Info</a> <a href="#">Detail</a>
10000012777	217.74	1.68	<a href="#">Info</a> <a href="#">Detail</a>	10000001712	2838.66	2.43	<a href="#">Info</a> <a href="#">Detail</a>
10000021854	195.93	1.51	<a href="#">Info</a> <a href="#">Detail</a>	10000001410	2618.56	2.24	<a href="#">Info</a> <a href="#">Detail</a>
10000028475	195.15	1.50	<a href="#">Info</a> <a href="#">Detail</a>	10000013661	2540.65	2.18	<a href="#">Info</a> <a href="#">Detail</a>
10000002871	180.43	1.39	<a href="#">Info</a> <a href="#">Detail</a>	10000006955	2505.09	2.15	<a href="#">Info</a> <a href="#">Detail</a>
10000009310	174.94	1.35	<a href="#">Info</a> <a href="#">Detail</a>	10000010571	2246.71	1.93	<a href="#">Info</a> <a href="#">Detail</a>

FIG. 40

## Detail Informaiton for CMID 10000002309

### Breakdown By Protocol

Protocol	Upstream Bytes	% of Total	Downstream Bytes	% of Total
HTTPS	437990	0	3649130	0
IP	1077630687	99	1089385948	99
Totals	1078068677		1093035078	

### Breakdown By IP Address

IP Address	Upstream Bytes	% of Total	Downstream Bytes	% of Total
24.221.206.66	1077630687	99	1089385948	99
24.221.206.71	437990	0	3649130	0
Totals	1078068677		1093035078	

### Breakdown of Protocols for IP Address 24.221.206.66

Protocol	Upstream Bytes	% of Total	Downstream Bytes	% of Total
IP	1077630687	100	1089385948	100
Totals	1077630687		1089385948	

FIG. 41

Bad cmid's encountered = 0

Statistics for Market ID 00000010, Market name = Phoenix (new)

Market ID	Date	HR	# of Subscribers	Mb Per Hour	Avg Per Subscriber	Avg MBPS	Peak # of MBPS
00000010	2000-12-12	00	000003	000000054.53	001817.00	000000.01	000000026.01
00000010	2000-12-12	01	000003	000000158.73	005291.00	000000.04	000000118.64
00000010	2000-12-12	02	000002	000000187.85	009392.00	000000.05	000000102.37
00000010	2000-12-12	08	000001	000000055.31	005531.00	000000.01	000000055.31
00000010	2000-12-12	10	000004	000000140.21	003505.00	000000.03	000000084.61
00000010	2000-12-12	11	000001	000000008.07	000807.00	000000.00	000000008.07
00000010	2000-12-12	12	000004	000000024.41	000610.00	000000.00	000000013.55
00000010	2000-12-12	13	000001	000000002.41	000241.00	000000.00	000000002.41
00000010	2000-12-12	15	000001	000000008.83	000883.00	000000.00	000000008.83
00000010	2000-12-12	17	000001	000000001.28	000128.00	000000.00	000000001.28
00000010	2000-12-12	19	000001	000000025.82	002582.00	000000.00	000000025.82
00000010	2000-12-12	20	000001	000000024.97	002497.00	000000.00	000000024.97
00000010	2000-12-12	21	000001	000000023.37	002337.00	000000.00	000000023.37

Statistics for udfg id 526, udfg name = south mtn 101-32/36

Total subscribers in SIF: 110

Udfg ID	Date	HR	Active Subscribers	MegaBits Per Hour	Avg Per Subscriber Per Second	Peak # of MBPS
526	2000-12-11	00	3	34.30	19.10	27.21
526	2000-12-11	01	5	541.81	180.181	388.12
526	2000-12-11	02	2	128.5	10.85	73.6
526	2000-12-11	03	5	761.39	253.239	731.53
526	2000-12-11	04	2	6.14	5.14	5.75
526	2000-12-11	05	5	442.1	14.221	403.91
526	2000-12-11	06	4	266.43	111.3	159.45
526	2000-12-11	07	2	2.99	2.59	1.94
526	2000-12-11	08	2	486.33	405.33	363.5
526	2000-12-11	09	4	312.11	130.11	221.18
526	2000-12-11	10	3	1111.96	617.136	797.57
526	2000-12-11	11	3	49.74	27.114	27.77
526	2000-12-11	12	4	50.63	21.23	41.30
526	2000-12-11	13	3	281.76	156.96	204.44
526	2000-12-11	14	6	598.4	16.224	319.80
526	2000-12-11	15	3	778.66	432.106	525.49
526	2000-12-11	16	3	12.77	7.17	11.60
526	2000-12-11	17	2	27.20	22.80	26.46
526	2000-12-11	18	5	14.80	4.280	6.12
526	2000-12-11	19	1	1.90	3.10	1.90
526	2000-12-11	20	5	44.86	14.286	35.99

FIG. 42

### Detail for IP nnn nnn nnn nnn from to 2000-12-12 23:59:59

This is a protocol breakdown for traffic from this IP address. This includes all protocol types, including all TCP and UDP protocols. Two special protocols, TCP~ and UDP~, correspond to "unknown TCP protocol" and "unknown UDP protocol". This means that we don't really know what kind of traffic it is at this point.

Protocol	Downstream KBytes	Upstream KBytes
----------	-------------------	-----------------

Totals:

Up: Kbytes

Down: Kbytes

### Protocol Summary - 2000-12-12 00:00:00 to 2000-12-12 23:59:59

This is a list of the most popular protocols on our network for the chosen date range. Measurements are in Megabytes and the date range is inclusive. Again, TCP~ and UDP~ represent "other" TCP and UDP apps which have not yet been identified.

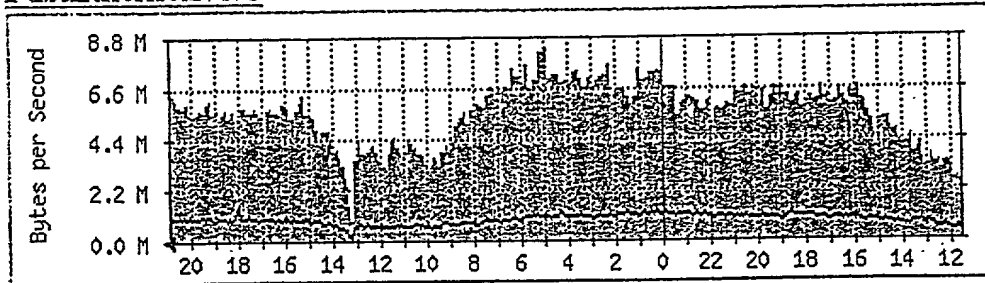
Protocol Name	Megabytes Transferred
NNTP	60997.67
TCP~	20632.16
NAPSTER	10798.85
FTP-DATA	8756.72
HTTP	6938.55
UDP~	3909.48
HTTPS	1215.48
POP3	571.60
AOL	183.04
FTP-CTRL	12.31
REALAUD	10.20
TELNET	8.48
SOCKET	6.92
SQLNET_N	4.31
SUNRPC_T	0.10
COMPUSRV	0.04

FIG. 43

# Router Traffic Analysis

## Daily Graph (5 Minute Average)

FastEthernet5/0/0



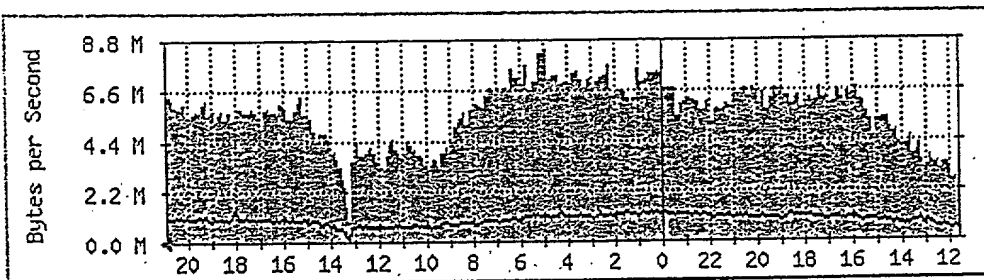
## Traffic Analysis for FastEthernet5/0/0

### edge01.phoenix.speedchoice.com

System: edge01.phoenix.speedchoice.com in  
Maintainer:  
Description: FastEthernet5/0/0  
ifType: ethernetCsmacd (6)  
ifName: Fa5/0/0  
Max Speed: 12.5 MBytes/s  
Ip: 207.240.93.202 (edge01)

The statistics were last updated Friday, 15 December 2000 at 21:00,  
at which time 'edge01.phoenix.speedchoice.com' had been up for 84 days, 10:51:32.

### 'Daily' Graph (5 Minute Average)

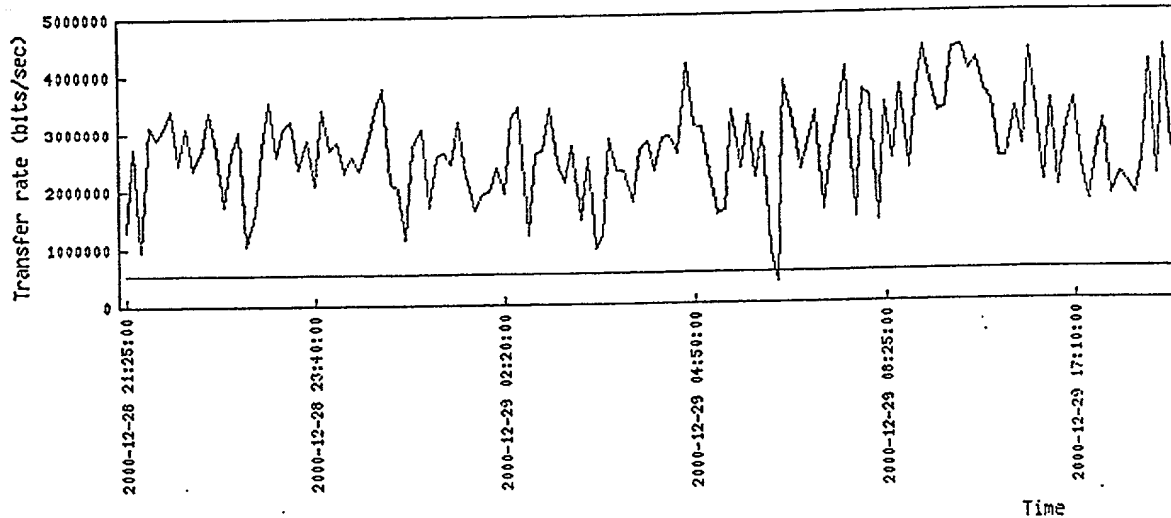


Max In: 8409.8 kB/s (67.3%) Average In: 5645.1 kB/s (45.2%) Current In: 6166.0 kB/s (49.3%)  
Max Out: 1446.9 kB/s (11.6%) Average Out: 944.8 kB/s (7.6%) Current Out: 1017.5 kB/s (8.1%)

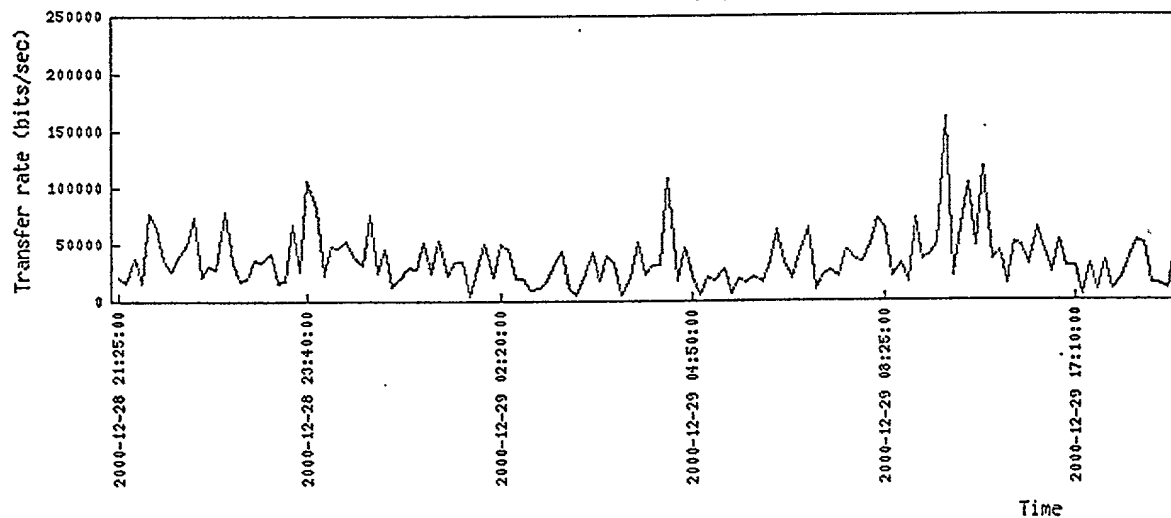
FIG. 44

# Sector sm102-32

Data Throughput (downstream)



Data Throughput (upstream)



Web Site Throughput (downstream)

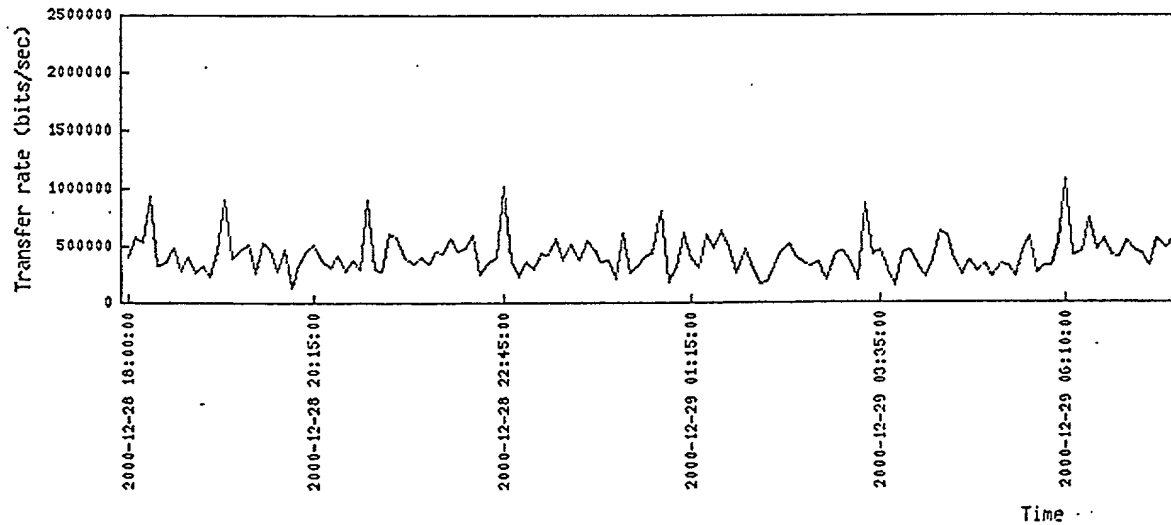


FIG. 45

FIG. 45

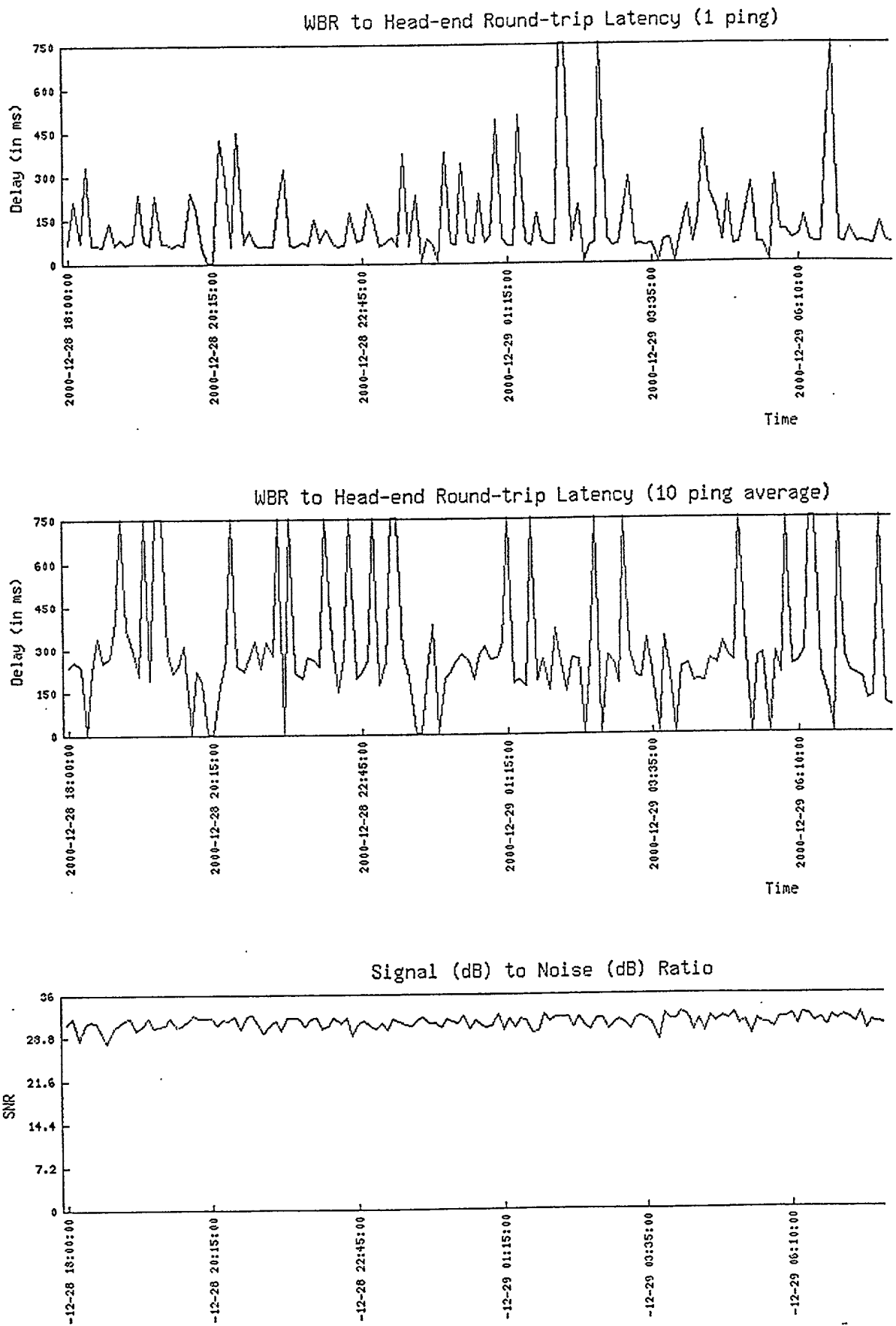


FIG. 46

0991015-104701

Peak Time: 2000-12-28 12:25:00 CST

Peak Active Modems	Sampled Modems	Activity Ratio
905	7115	12.72%

Modem Counts		
Contention	Polling	Dedicated
0	847	58

Off Peak Time: 2000-12-28 06:00:00 CST

Off Peak Active Modems	Sampled Modems	Activity Ratio
152	7115	2.14%

Modem Counts		
Contention	Polling	Dedicated
0	98	54

Individual Peak Modem Counts		
Contention 2000-12-28 12:55:00 CST	Polling 2000-12-28 12:25:00 CST	Dedicated 2000-12-28 05:45:00 CST
10	847	88

Avg. Time Spent Per User		
In Contention	In Polling	In Dedicated
0.03 secs	0.71 secs	1.48 secs

FTP Rates At Off Peak 2000-12-28 06:00:00 CST		FTP Rates At Peak 2000-12-28 12:25:00 CST	
Downstream 3.54 Mbps	Upstream 85.83 Kbps	Downstream 2.21 Mbps	Upstream 32.02 Kbps

FIG. 47a

Peak FTP Rate Downstream  
2000-12-28 01:40:00  
6.03 Mbps

Peak FTP Rate Upstream  
2000-12-28 07:20:00  
217.87 Kbps

2000-12-28 00:00:00 CST thru 2000-12-28 23:59:59 CST

Average FTP Rate Midnight-6pm (off peak)		Average FTP Rate 6pm-Midnight (peak)	
Downstream	Upstream	Downstream	Upstream
2.69 Mbps	51.31 Kbps	2.01 Mbps	38.27 Kbps

2000-12-28 00:00:00 CST thru 2000-12-28 23:59:59 CST

Average HTTP Rate Midnight-6pm (off peak)	Average HTTP Rate 6pm-Midnight (peak)
470.34 Kbps	384.46 Kbps

FEC Corrections	FEC Uncorrectables
32.55 : 1000	1.53 %

	Available Channels	
	230	
Max Functioning Channels	Min Functioning Channels	Avg Functioning Channels
230	68	226.44
Max Non-Functioning Channels	Min Non-Functioning Channels	Avg Non-Functioning Channels
162	0	3.56

Signal to Noise  
Ratio  
24.93 : 1

Requested to Scheduled  
Modem Calibration Ratio  
0.65 : 1

Downstream to Upstream  
Bitrate Ratio  
(All MEASUREMENTS ARE PER USER)

02:00:00 - 02:15:00 CST	10:00:00 - 10:15:00 CST	14:00:00 - 14:15:00 CST	22:00:00 - 22:15:00 CST
12-28 4.01 : 1	4.46 : 1	10.68 : 1	4.56 : 1

FIG. 47b

FOOTNOTES

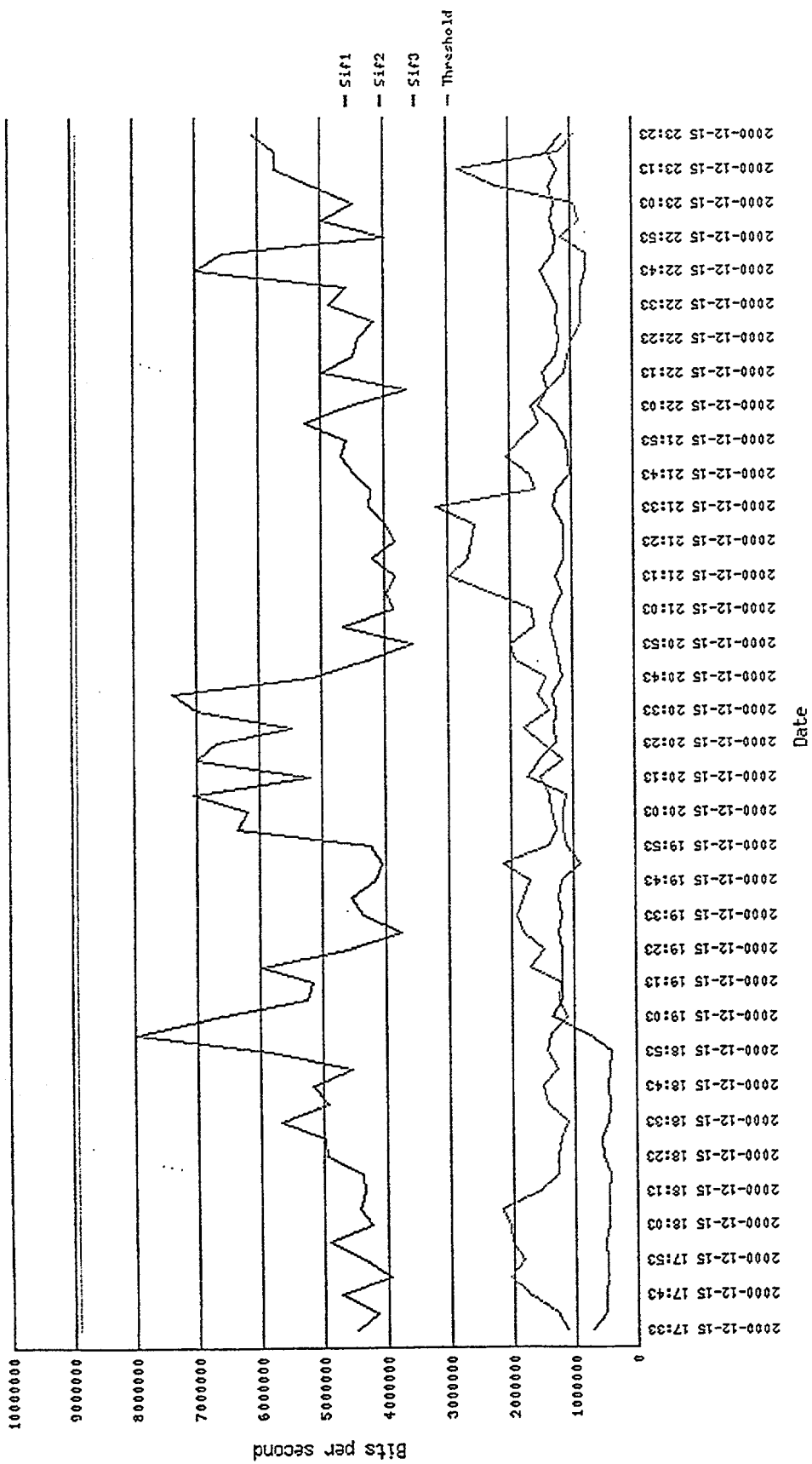


FIG. 48